A Supplement To
COMPUTERWORLD

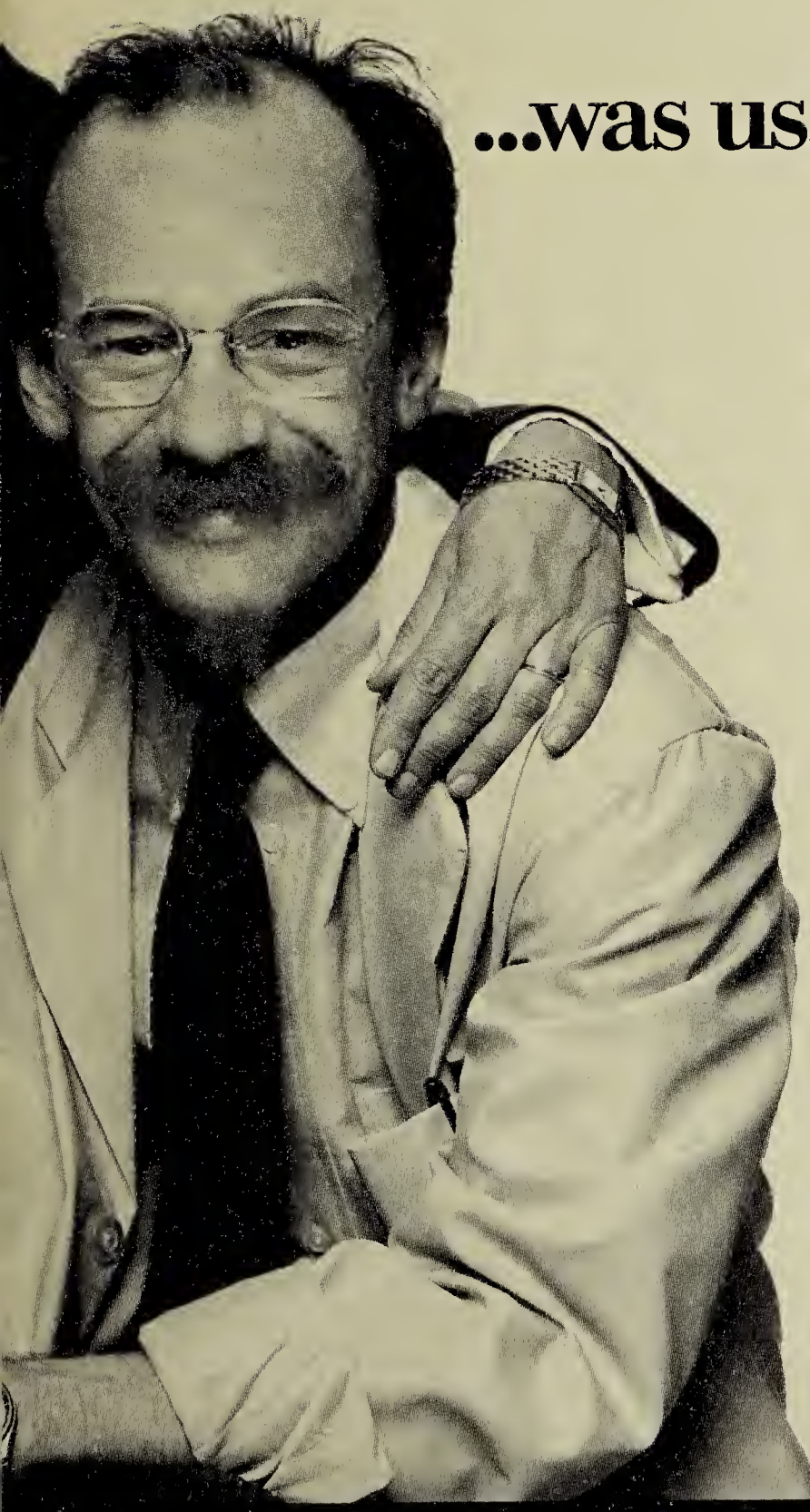
JAPAN

• IS Struggles To Bridge Tradition And Technology

puters...

...but what they really connected...

...was us."



"We started out with stand-alone PCs, but then we remembered we aren't stand-alone people. We like to share information and toss ideas around, but our computers weren't in the act.

"So we did some brainstorming and, sure enough, came up with a brilliant solution.

"Somebody said, 'Let's call IBM.'"

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Exploding Myths

Japan, the obsession. The looming black shadow of the Soviet Union is dissipating, almost gone. Japan has become the intimidator, the predator. Japanmania is in full swing.

The average U.S. citizen now dubs Japan Public Enemy No. 1, and to some Japanese, the enemy is us. Thirty percent of Japanese people under 20 say that if a war broke out tomorrow, that war would be with the U.S.

The media blitz leaves an almost surreal image of Japan. How does this tiny nation weave its magic? How has it propelled this economic juggernaut? What is fact and what is myth?

Fact: Japan has a higher per-capita gross national product than the U.S. and a staggering trade balance advantage (+$64.3 billion, compared with -$50 billion for the U.S.). The Japanese are better savers, better investors and a major force in the global economic picture.

Virtually every aspect of Japanese might has been scrutinized and documented in the business press, except for a hard look at the country's information systems environment. Japan has earned renown for its automated factories and manufacturing prowess. But what about the use of technology for strategic advantage in the rest of the business world? How does Japan stack up in its implementation of IS?

Computerworld decided to explore this heretofore unknown sector from within Japan. To prepare this issue, we sent four editors to Tokyo to survey the IS community and meet with Japan's IS movers and shakers. Executive Editor Paul Gillin, Features Editor Joanne Kelleher and Senior Editors Clinton Wilder and Amiel Kornel spent a total of four weeks in Japan meeting with IS leaders in major corporations.

What they found poked holes in many of the stereotypes Americans hold about Japan and the Japanese. Although much has been written and said about how the Japanese capacity for vagueness can leave visitors scratching their heads in confusion), the IS people were forthright and enthusiastic. Interviews yielded insight into everything from Japan's desktop woes to the implementation of advanced technology, from the crushing shortage of programmers to the growing independence of users from their computer vendors.

The perception of an American lead in IS has merit — but only to the extent that inherent cultural issues have slowed the Japanese down. It is clear that strategic information systems have become a mandate for every major corporation. IS is now a target, and the Japanese hit their targets with stunning accuracy. The gap is shrinking.

More importantly, IS serves as a platform for cooperation and learning. The Japanese greatly admire what IS pros have accomplished in the U.S. and have an endless thirst for ideas and knowledge from the U.S. community. It was a spirit of sharing, not confrontation, that greeted our Tokyo team. Perhaps in a time of escalating tension, that is an essential quality to engage.

Glenn Rifkin
Editor

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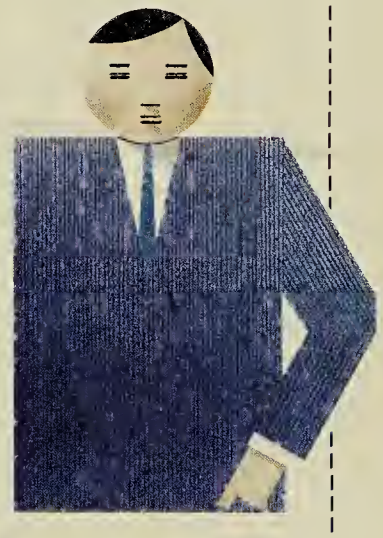


With the IS labor shortage reaching crisis proportions, Japanese managers are breaking old staffing taboos. Page 23.

Sony's IS chief in Japan seeks information sharing. Page 10.

The

Information Age, Japan Style

joho: *information*

BY PAUL GILLIN

Westerners who do business in Japan inevitably come to the same conclusion: Things are not as they seem. The information systems area is no exception.

On the surface, IS professionals in Japan deal with pretty much the same realities and concerns as their U.S. counterparts. Cobol is the programming language of choice, the chief information officer concept is emerging, application backlogs are a problem, good people are hard to find, everyone wants to use IS for competitive advantage, but few succeed in doing so.

The cultural and business realities surrounding IS, however, could not be more different. "This is the sixth culture I've worked in, and Japan is, by far, more alien than any place I have ever lived," says Charles Cronheim, director of IS at Mobil Sekiyu Kabushiki Kaisha. "Not bad, just different."

A business climate in which lifetime employment is an entitlement fosters a degree of company loyalty unknown in the U.S. But such security can also encourage sloth. Meetings often drag on as everyone tries to agree on a course of action; however, the unanimity that emerges from these sessions is remarkable.

The kind of rearguard user action that brought personal computers covertly into U.S. offices during the early 1980s has not happened in a culture where channels of authority are acknowledged and respected. Japanese users and vendors may spend two or more years negotiating a single contract, but the resulting ties are long-lasting. "Once you start work, the relationship is open-ended," says Mark K. Shull, manager of business development at EDS Japan Ltd.

How much IS has contributed to the Japanese economic miracle is debatable. Experts generally agree that IS is still emerging from a support role and is three to five years behind its U.S. counterpart. Even at this stage, however, IS plays a key part in contributing to the efficiency for which the Japanese are so renowned. "Japan looks at strategic information systems as a way to make the business run faster and more efficiently," says Kevin K. Jones, principal at McKinsey & Co. in Tokyo.

In terms of a direct comparison between the U.S. and Japan, the U.S. is clearly further up the information systems learning curve. Indeed, Japanese IS professionals watch the U.S. intensely. For example, interest in

strategic IS is just beginning to crest in Japan, though it has already waned somewhat in the U.S. The concept of CIO is stirring great curiosity, though few Japanese CIOs exist. "We have 'Japanized' the CIO," says Bundou Yamada, president of Fujitsu Research Institute. "He's one of the consensus makers."

Some basic concerns are almost identical between the two cultures. Japanese IS executives are concerned with cost-cutting, the stereotypes of long-term investment notwithstanding. They complain about long backlogs and poor productivity. Many criticize top executives for not being more attuned to the potential of technology.

However, the Japanese approach to the same ideas and problems is often very different. The concept of strategic information systems (SIS) is unlikely to be the flash in the pan that it was in the U.S. (see story page 7). "Japanese, by their very nature, view information as a highly precious asset," says Steve Stilling, president of the communications and integration services division of Computer Sciences Corp. Furthermore, consensus thinking creates an environment in which strategic systems projects, once begun, are more likely to be finished.

Those projects often have very different goals from strategic projects in the U.S. The Japanese pride themselves on honing processes to their highest possible efficiency, a characteristic that has made them the world's most effective manufacturers. Americans, in contrast, tend to use IS to change the rules, applying it to the job of finding new ways to do business. "If you give me a choice, I'll take an American to do planning and analysis and a Japanese to do implementation," says Gabriel Rozman, information technology director at Ernst & Young International.

Some of the most notable strategic information successes in Japan have been of the fine-tuning nature. 7-Eleven Japan Ltd. developed a just-in-time delivery system for its stores that is so intricate that inventories are replenished three or four times per day. That is a big cost-saver in Tokyo, where sky-high land prices make inventory an expensive luxury.

Yamato Transport Co. Ltd. is using information generated as a by-product of its industry-leading overnight delivery business to expand into new services such as book clubs and refrigerated goods handling. "By just expanding our existing information system, we were able to add new lines of business," says Takashi Sekita, director of the applications improvement department at Yamato.

There is a new sense of urgency to Japan's quest. Low-cost competition from other Pacific Rim nations and a strengthening yen are forcing Japanese industry to invest further in streamlining production. The booming service sector is sucking up increasing numbers of college graduates into its well-paid ranks, heightening an already critical labor shortage in production industries. The Japanese hope the strides they have already made on the factory floor will enable them to get more out of computer-integrated manufacturing (CIM) than Americans have thus far.

Japan is also confronting the need to offset its high wage scales by transforming its economy to a service orientation. The percentage of workers in manufacturing jobs is expected to drop from 55% in 1970 to 40% by the year 2000, while employment in services will increase from 25% to 40% of the economy, Fujitsu's Yamada says.

As a result, service providers such as banks and securities firms are aggressively competing with one another to offer new services. The Sumitomo Bank Ltd. brings in more than $10 million per year selling software originally developed for its internal use. "IS is going to be the key to the success of the banking business," says Genichiro Ogawa, assistant general manager at the operations administration department of Sumitomo Bank.

Japanese companies have some distinct advantages in developing effective IS. The country has a highly advanced telecommunications system, having built full Integrated Services Digital Network capability from scratch within the last five years. Taisho Pharmaceutical Co. Ltd. has harnessed a nationwide network of 3,500 point-of-sale systems to collect statistics on sales of its products and is now tying that into a CIM system that will change production lines dynamically as new supplies are needed.

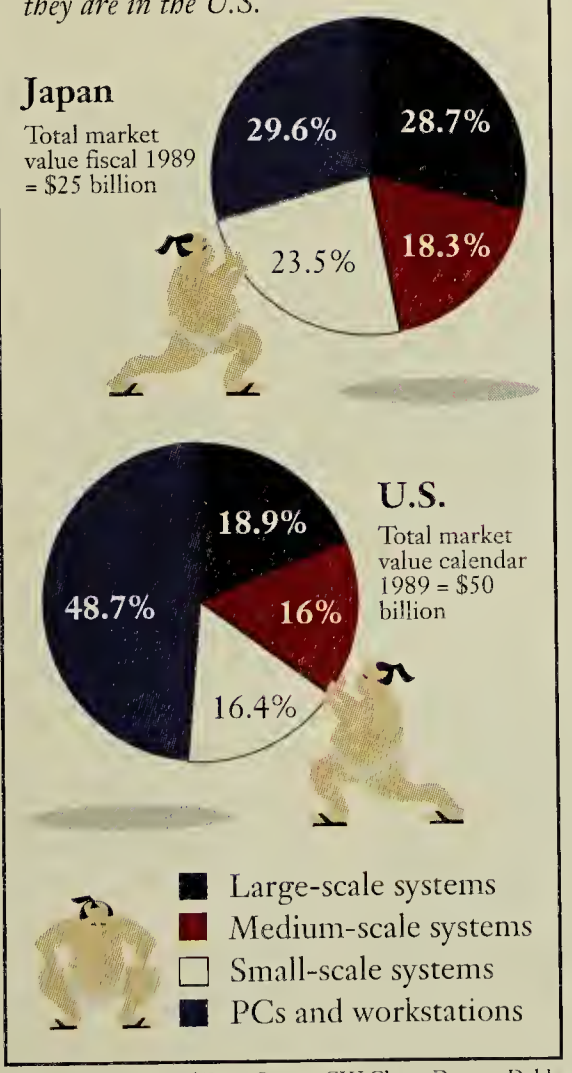
In contrast to the U.S.' nightmarish educational problems, Japan has a well-trained, highly motivated and increasingly innovative work force. Though the curriculum still stresses rote memorization, the image of Japan's educational system as an uncreative "robot factory" is far overblown. There were more Japanese companies than U.S. companies among the top 10 recipients of U.S. patents last year.

Personnel shortages are a problem, but an institutionalized rotation system that moves employees where needed helps prevent critical projects from stalling. It also turns out well-rounded managers. "In the West, we tend to create specialists. In Japan, we tend to develop generalists," says Sam Hisamune, general manager of business operations at EDS Japan.

Friction between users and IS that is so entrenched in U.S. corporations is less of a factor in Japan. "When I worked in the U.S., users looked at IS as [only] giving them technical solutions," says Susumu Takahashi, deputy senior general manager at Sony Corp.'s IS group. "In Japan, almost all

Thinking big

Mainframe computers are more prevalent in Japanese companies than they are in the U.S.



Source: International Data Corp. CW Chart: Doreen Dahle

key users know what the IS activities are." That understanding spills over into a more casual attitude toward project management. "The Japanese tend to go into a billion-dollar project with just a couple of sheets of paper" for an outline, Rozman says. "They have great trust in their ability to work together."

But the island mentality and Japanese corporate culture present their special problems as well. Software application backlogs in many companies exceed five years and are not shrinking. Japanese users and vendors alike are slaves to the "not invented here" syndrome. The result is a proliferation of proprietary architectures and a tendency to develop even the most routine of applications from scratch rather than buying elsewhere. EDS Japan estimates that 80% of Japanese software is still developed in-house.

That mindset has slowed the move to standards and burdened users with a mountain of custom software to maintain. "The whole Japanese [computer] industry is still proprietary," says Rob Morel, director of OSF Pacific, the Japanese office of the Open Software Foundation.

The country also faces a shortage of nearly one million programmers by the year 2000 (see chart, page 24). The Ministry of International Trade and Industry (MITI) has undertaken an effort to cope with that problem by launching a $200 million project to build a standard computer-aided software engineering system.

End-user computing lags far behind the U.S., in part because language problems are only now being overcome by sophisticated software. Many Japanese users still rely on U.S. vendors for systems and PC software, and translation to Japanese is ponderous. Novell, Inc. did not open a Tokyo sales office until this year, and it took four years for Lotus Development Corp. 1-2-3 to make it across the Pacific.

However, the Japanese have shown a willingness to be patient and learn. Having entered the IS age later than their counterparts in the West, they have made fewer mistakes. Japanese IS managers openly admire the achievements of U.S. strategic information practitioners. But they believe they can do better. □

GILLIN IS COMPUTERWORLD'S EXECUTIVE EDITOR.

THE EPITOME OF EFFICIENCY

ASK A JAPANESE IS manager to name the prototypical example of a Japanese strategic information system and chances are he will mention Kao Corp.

Few Japanese firms have changed their business more fundamentally or come to dominate their market more completely through the use of IS than Kao, a $4 billion maker of personal care products, cleaning supplies and specialty chemicals.

As the company is quick to point out, however, business changes have been the key to its success, technology merely the enabler. "People say our system is strategic, but it's not just our computers," says Takahisa Yano, senior manager in Kao's systems development department. "It's the modernization of our distribution system and the human network we have built around it."

Kao researchers *test the effects of fats and oils on food products*

Kao shook up its industry 23 years ago by completely changing traditional distribution channels. Out went a distributor middleman who stood between manufacturer and retailer. In came a network of 129 Kao Sales Companies, or *hansha* — dedicated manufacturer representatives who dealt directly with retailers. "In this competition, winning and losing depend on getting your products displayed on the shelves," Yano says.

The *hansha* were equipped with office computers and linked over a value-added network directly to Kao headquarters. "This gave us accurate figures on the total inventory of Kao products all over Japan," Yano says.

In 1976, Kao set out to build a just-in-time distribution network to replace the inventory-laden warehouse process. The company bought out all inventory from its *hansha* and transferred it to headquarters.

The inventory repurchase cost Kao about a month of sales, but the rationale was strategic. Kao was better able to launch products because it did not have to face *hansha* resistance to stocking inventories of untested new wares. Total inventories were ultimately cut by nearly 30%.

Data was put to work in new ways. The firm folded point-of-sale information into a market analysis system, and a telephone service system was created to field customer questions and complaints, feeding that information back to the research and development labs.

In 1980, Kao became one of the first manufacturers to tie in electronically to major retail chains. Retail chains could submit orders in batch which Kao would process and ship out separately to the appropriate *hansha*. Kao now serves more than 900 retail chains this way, some encompassing more than 200 stores.

In 1982, Kao halved its delivery time from 48 to 24 hours by equipping *hansha* sales personnel with portable terminals and modernizing its factories. The sales representatives now transmit orders directly from customer sites. Warehouses were consolidated — only two now serve the Tokyo area, compared with 15 previously. Kao, which spent roughly $55 million on IS last year, is now able to process orders as small as a single bottle of shampoo and ship them out within 24 hours. But therein lies a problem as well. The flexibility retailers have realized from just-in-time distribution has caused them "to minimize their own inventory and have the [manufacturers] carry it instead," Yano says. In short, Kao is so good at satisfying small orders that it now gets too many of them. To compensate, the company now offers retailers bigger discounts to order in larger quantities. The message: "The system works. Don't abuse it." — Paul Gillin

Strategic AMBITIONS

BY CLINTON WILDER

It is almost impossible to spend more than five minutes inside a Japanese company of any size without hearing the letters SIS. Pronounced separately and almost always intoned fervently, they stand for strategic information systems — a concept that has virtually become a corporate obsession.

"As usual, the Japanese are learning from the successes and failures of the U.S.," says Charles Wiseman, a consultant and Columbia University Graduate School of Business professor whose 1988 book, *Strategic Information Systems*, has sold more than seven times as many copies in Japan than in the U.S. "I speak to waves of Japanese study tours that are trying to get their hands around it and understand what distinguishes the successful implementers of SIS."

Companies' willingness to cooperate on technological initiatives could serve as a springboard for SIS

To be sure, there are already Japanese SIS examples that have become legendary in Japan's IS circles. The most famous are Yamato Transport Co. Ltd., whose package tracking systems propelled it to No. 1 in overnight delivery services, much like Federal Express Corp. in the U.S., and Kao Corp., which used an electronic distribution system to revolutionize the consumer health-care products industry in Japan (see story page 6).

A less well-known but similarly impressive example is a company named Toyo Sassi, which vaulted from No. 3 to No. 1 in the aluminum building frame market by providing on-line ordering terminals to its retailers, which shortened product delivery from two or three weeks to one day.

In general, however, Japanese IS managers understand that those kinds of preemptive competitive strikes with information technology are extremely rare. Coming to the SIS process later than the U.S., the Japanese are tending to define strategic systems more realistically than their American counterparts did at first. In fact, their definition is very close to the pragmatic version now extant in the U.S. In Japanese terms, SIS is more akin to re-engineering business processes or distribution relationships than designing one particular system or using information to break into a new market.

A Japan Institute of Office Automation survey of 239 Japanese companies earlier this year bears this out. Less than 5% of the respondents listed "start new business by utilizing existing database" as an SIS-related activity in their firms. Accelerating the process of gathering and delivering distributed information within the company was the No. 1 SIS-related process, cited by 49% of the companies (see chart page 9).

Those priorities are particularly reflective of the challenges currently facing manufacturing. Japan may have pioneered shop-floor automation and just-in-time inventory, but deriving the right information from customers and suppliers and using it strategically is still an elusive goal for many manufacturers.

Kaku Kurita/Gamma Liaison

Kikkoman's Saito *says even fierce rivals recognize the benefits of agreeing on standards*

VOLUME TRADING

THE FIRST SOUND a visitor makes as he steps from the elevator on the fourth floor of Sanyo Securities is usually a gasp.

Sanyo Securities, though little known outside the Japanese market, boasts the world's largest trading room. In fact, Sanyo claims that the airline hangar-size structure, situated about 20 minutes from downtown Tokyo, is the largest continuous open work space in the world.

Just as striking as its 40,000-sq-ft expanse is the amount of information on display within the trading center. Four giant flat-panel displays flash tables and graphs at one end of the room. Exchange figures flicker across tote boards on two side walls. And each of the 750 trader posts on the floor faces three video screens and one dedicated computer terminal.

Sanyo Securities views technology as its edge against top players. "We cannot win by competing on the same basis as the big four" Japanese securities firms, says Shojiro Ono, general manager of the systems planning department. "We are using our computers as a competitive weapon."

Two major new thrusts are Sanyo Investment Research New Information System (Sirnis), an integrated sales support system, and Personal Computer Analysis System for Your Portfolio (Pasport), a home computer-based customer investment support and order system.

Sirnis is a PC-based system with a built-in link to one of Sanyo's three IBM Model 3090 mainframes. Salespeople can use it to make timely and well-grounded recommendations to customers, using current quotes, a built-in real-time news ticker and the latest reports from Sanyo's stock analysts. Sales representatives can pull up historical information on individual stocks, look at detailed price information for the last several days and graphically display stock performance over time. Recommended buy and sell points from Sanyo analysts are built into the displays, giving sales representatives the benefit of expert advice in one neat package.

Similar information is also available to individual clients through Pasport, a home portfolio analysis and ordering system that runs on more than 70 brands of PCs as well as on Japan's ubiquitous Nintendo systems.

Investors with more than 3 million yen (about $20,000) in a Sanyo Securities account can call a local number from their PC and tap into investment information on Sanyo mainframes.

Among other services, they can get real-time quotes, news wire information and stock data for graphical display on the PC; electronic mail to their sales representatives; and access to a Sanyo bulletin board of information about the market. These users can also buy and sell stocks and bonds electronically.

— Paul Gillin

Sanyo Securities *boasts world's largest trading room and a technology edge*

SIS "is giving them some trouble," Wiseman says. "It's not like a particular manufacturing technology, where they can come and observe the U.S. and make incremental adjustments."

The best Japanese examples of SIS are in airlines and the distribution and transportation industries, says Akira Kawai, general manager of the MIS division at NEC Corp. "SIS in manufacturing is not very clear," Kawai says.

Even NEC, Japan's leader in personal computer market share, is not immune to this problem. The company would like to do better in retail sales of PCs, word processors and facsimile machines, and about three years ago put in place what Kawai calls "the basic foundation of SIS" — providing its distributors (known as dealers) with on-line ordering terminals or access to NEC via a public network for those that already have a PC.

A number of the components necessary to make this systems approach truly strategic are still missing, however. "We need to tell them when we can deliver orders and give information about new products," Kawai says. "We want to get information about inventory and better customer data. Right now, the system doesn't provide this."

Do Japanese firms lag behind U.S. businesses in using information strategically? Yes, Wiseman and other observers say. But within many Japanese industries, the tradition of long-standing business relationships and the willingness of competitors to cooperate on technology initiatives creates an infrastructure in which SIS is likely to thrive.

"Unlike Americans, who are not inclined to cooperate with each other, in Japan cooperation is cultural, legal and encouraged," Wiseman says. "We might see the emergence of a number of systems that require cooperation, like EDI."

Japan's Association of Food Manufacturers, which includes both wholesalers and retailers, has held standardization meetings for five years to develop uniform product coding standards. Such consortia are common throughout Japanese industry, and many bring IS managers together in meetings sometimes sponsored by computer vendors.

"We may be competitors in business," says Shohei Saito, general manager of the IS department at Kikkoman Corp., the world's largest soy sauce producer and a $950 million company. "But as far as the information infrastructure is concerned,

we feel we should cooperate."

In the pharmaceutical industry, a consortium of pharmacies developed the Pharma network to link pharmacies to their suppliers. The system is comparable to those developed by U.S. drug distributors McKesson Corp. and Bergen Brunswig, Inc., but in Japan it was a collaborative effort.

"That's the kind of thing that's different," Wiseman says. "The group was already there and had a tradition of cooperating before the system was designed."

The Japanese definition of SIS encompasses not only improving customer/supplier relationships but also empowering internal managers with better decision support data.

Many companies are trying to rationalize various databases. Kikkoman is moving from several different Fujitsu Ltd.-based databases for customer and competitor information to an integrated decision support system based on IBM's DB2.

Managers at Tokyo department store chain Marui Co. Ltd. can access on-line, companywide customer, credit, merchandising and administration information on Marui's Total Operation System. Marui department managers "get to handle information that would otherwise go only to top management," says Motokazu Orihata, president of Peat Marwick Consulting Co. Ltd. in Japan. "Each manager can scan the database to see what's going on in other stores, just like the president. SIS can revitalize corporate culture."

Can SIS also help Japanese companies compete globally? The concept of information as a competitive differentiator is fairly new in Japan, but it is being studied intensely — just as the playing fields of manufacturing efficiency and product quality were studied in the past. At an ever-increasing rate, Japanese companies are seeking ways to compete on the new global playing field of SIS in the next 10 years and beyond. □

WILDER IS COMPUTERWORLD'S SENIOR EDITOR, MANAGEMENT.

SIS = Business improvement

Systems that empower through distribution of better information are considered strategic in Japan

Percent of respondents; base: 239; multiple responses allowed

か		Fiscal year 1989	Fiscal year 1988
What does your company actually do as a part of SIS activities?	1 Speed up gathering/processing/ delivering distributed information	49%	36.3%
	2 Build database of in-house information and enable it to be accessed from anywhere within the company	30%	24.4%
	3 Increase added value by linking departmental information	28.9%	23.3%
	4 Link the company's information systems with customers' or other companies' systems	27.2%	26.7%
	5 Support decision-making by strengthening the system to inform the status of resources to managers	24.3%	14.1%

Source: Japan Institute of Office Automation

CW Chart: Doreen Dahle

AERIAL MANEUVERS

SOMETIMES THE BEST OFFENSE is a good defense.

Such is the case with Japan Air Lines (JAL), a Japanese institution that is using travel agent automation to keep itself on top of the airline heap.

Four years ago, JAL faced a competitive problem from United Airlines, which was moving its computer reservation system into the Japanese market. "We saw it as a strategic threat," says Eiichi Matsubara, manager of planning in the information management and systems division.

Exploiting what it perceived as the greatest weakness of the United System, which was that it operated in English, JAL set out to build a full-scale personal computer-based travel agent automation system tailored to both the language and the requirements of Japanese users. In pursuit of this goal, the IS and support departments jointly interviewed more than 100 travel agents about their preferences. The results were rolled up into a design for a workstation front end with an on-line link to JAL's cluster of IBM and Hitachi Ltd. mainframes.

JAL contracted with Mitsubishi Electric Co. to build the front end, while JAL's two data processing subsidiaries — JAL Data and JAL Creative Systems — developed the mainframe portion in conjunction with IBM Japan.

Two years later, JAL rolled out Axxess, a packaged computer system designed to run on a 32-bit Mitsubishi Corp. PC. Axxess gives the travel agent up to four windows on a screen in which various local- and on-line information can be displayed. For example, an agent can view reservation records on one screen and shopping information about a destination in another.

In addition to full on-line reservation facilities using a public 64K bit/sec. packet-switched network, Axxess links to a travel information database on an IBM 3090 at JAL's data center. Agents can tap into a database of travel information on hotels, shopping, recreation and the like using a simple keyword search.

JAL mainframes also have gateways to a hotel reservation network, and the carrier is working on transparent links to other major airlines' reservation systems. A fare calculation system processes up to 32 itinerary points, letting the agent optimize a traveler's connections for the lowest cost and shortest wait. The Axxess system also has local features for travel agency automation like a PC database and pop-up notepads and calendars.

As a defensive strategy, Axxess has done its job. JAL counts 3,400 agents with PC-based Axxess systems among the 15,000 on-line terminals that are connected to its massive network. That number represents a considerable lead on United's reservation system in the Japanese travel market.

— Paul Gillin

CASE STUDIES

The Japan View

BY CLINTON WILDER

Information systems at Sony Corp. endeavor to combine the best of Eastern and Western worlds

Outside of the automobile industry, Sony Corp. and its outspoken chairman, Akio Morita, are probably the most famous symbols of the Japanese competitive threat to U.S. companies. It's a long legacy: *Time* magazine ran a cover story on Sony and Morita titled "How to Cope with Japan's Business Invasion" in 1971.

But in Japan, Sony is considered very Westernized. It is the only Japanese company with foreign-born executives (one American and one West German on its executive committee.

A visit to the management and operations systems group at headquarters in southern Tokyo's Shinagawa district confirms the Western influence. Unlike the typical Japanese office, in which workers are cramped together in an assembly line of desks, the 44-year-old firm's carpeted quarters features individual cubicles, a light gray decor and ergonomic chairs.

The global feeling is more than superficial. Sony employs 800 information systems professionals in its overseas business units, which is nearly as many as its 1,000 IS employees in Japan. Furthermore, the head of the 150-member corporate IS group, deputy senior general manager Susumu Takahashi, has done two tours of duty at Sony Corp. of America headquarters in Park Ridge, N.J. His associate, Michio Yoshino, general manager of the planning and control division in the management and operations systems group, has also done an IS rotation in the U.S.

Takahashi's main goals for IS also have a remarkably familiar ring in the U.S. — make manufacturing more flexible and responsive, create a global network infrastructure and shorten product lead times. In other words, Sony is seeking to chop away bureaucracy with better use of *joho* (information). "The bigger the company grows, the more there are barriers to information-sharing," Takahashi says.

The traditional Japanese management paradigm emphasizes ideas percolating up through the hierarchy by consensus, but Sony believes top-down planning and coordination are also critical for the successful use of IS. Three years ago, Deputy President Ken Iwaki set up several task forces and committees, made up of both systems and business managers, to hammer out Sony's information strategy.

Takahashi credits Iwaki's leadership in functioning as the Japanese-style chief information officer (see story page 13) with better coordination between IS and users throughout the organization.

The core of Sony's IS strategy is a planned global network that will integrate locations and functions throughout the company. The network would allow users in the major product operations in New Jersey, Japan and Cologne, West Germany, to share data on sales, production, product design, quality, repair history, accounting, purchasing and management procedures.

Currently, Sony executives in the three countries hold directors' meetings with teleconferencing technology.

With 90,000 employees worldwide working in decentralized, product-oriented business units, Takahashi's goal of sharing and consistency among those units is daunting indeed. Re-engineering old applications is the biggest challenge. He says he is less than impressed with the capabilities of current computer-aided software engineering (CASE) offerings.

Sony doesn't have one particular system that it points to as a

Kaku Kurita/Gamma Liaison

Sony's Takahashi *seeks integration*

N · Y ·

The U.S. View

BY GLENN RIFKIN

Bob Trenchard, the 49-year-old senior vice-president of MIS, joined Sony Corp. of America 4½ years ago, just as Japan-bashing was becoming a national pastime. Trenchard's reaction was to become a staunch supporter of the Japanese way of doing business, specifically Sony's.

Making Trenchard's situation more comfortable is the autonomy he has in running Sony's entire U.S. information systems operations, along with the fact that Sony, under Chairman Akio Morita, is intent on being an international company. Morita himself spent a year in the U.S. in 1960 helping to start Sony Corp. of America. Today, Sony employs 9,000 Americans across the U.S.

For the first time, Sony is moving significant portions of research and development, manufacturing and engineering out of Japan and into the U.S. and Europe, which presents major challenges as well as opportunities for IS.

Sony's Deputy President Ken Iwaki, the firm's chief information officer, is looking to Trenchard's group to bring its knowledge and experience in such areas as computer-aided software engineering (CASE), executive information systems (EIS) and artificial intelligence to aid this globalization effort.

Departmental autonomy and an anticipatory corporate culture help ease growth strains at Sony's U.S.-based operations

Cultural pluses

Though complaints are common about the difficulties Japanese subsidiaries have in the U.S. in dealing with cultural and language differences, Trenchard says he believes the values of Japanese business help rather than hinder his efforts. "Most American companies are shortsighted, not willing to tough it out," Trenchard says. "I'm expected to make a profit [here], but I don't live in fear month to month."

Trenchard finds benefit in Japanese-style decision-making. "Americans are big into planning, and if they don't have resources, they go out and find a way to get them. The Japanese will scale back, reshape things and go step by step. It can be slow and frustrating, but it's a better way. When we do get consensus, we can really move fast."

Andy Freeberg

Sony's Trenchard *likes Japanese methods*

Three years ago, with Iwaki setting the agenda, the company agreed that it had to decrease its response time to market and deliver products faster. IS, Iwaki insists, has to be the vehicle for that around the world. "He is a brilliant strategist, a businessman, not a technologist," Trenchard says of Iwaki. "He wants to move the whole corporation into a just-in-time way of doing things."

At the same time, Sony Corp. of America found itself in transition, moving from a sales and marketing operation to a "full company," heavily involved in research and development, manufacturing and engineering.

To this end, major changes needed to be implemented in the U.S. IS operations, and Trenchard was brought in to spearhead the effort. An early priority, he says, was to get IS to come down from its technical ivory tower and get out into the business world of the end users.

Sony has instituted a "distributed, not decentralized" approach to IS. Using CASE (Texas Instruments, Inc.'s IEF product), Trenchard is pushing applications development out to the various business units, which are different and have different focuses. For example, the industrial products sector has different concerns from the consumer products group and requires specific applications that are better developed in that business unit.

Today, Trenchard is overseeing the consolidation of five data centers across the U.S. into one cross-country data center based simultaneously in Park Ridge, N.J., (corporate headquarters) and San Diego.

He is also replacing major portions of Sony's sales order entry and inven-

SONY: JAPAN VIEW

Continued from page 10

strategic information system. It measures its IS effectiveness by how well the technology supports the corporate goal of streamlining production and sales.

Computer-integrated manufacturing strategy at Sony is made up of more than internal production. It also involves improving the information flow to and from captive manufacturing subcontractors and component suppliers, which number more than 170 in Sony's case.

"The goal is to speed up our business," Takahashi says. "That's strategic."

Takahashi says the IS/user relationship is better than what he saw during his two stints at Sony Corporation of America. "In the U.S., users wait to get involved until you get closer to the installment of the system," he says. "As a result, it takes a lot of time. Here, you work together with the users from the start. The user knows the risks and tries to go forward with you."

He also says U.S. users tended to blame IS for not understanding their jobs. "In Japan, we understand each other's headaches," he says. "Almost all the key users know what the IS activities are."

An example of that type of cooperation is an office automation project called Project of Advanced Workstyle, which is attempting to design more user-friendly interfaces as well as data-sharing and office applications for Sony employees using Sony's Unix-based News workstations. The project's general manager is Mitsuru Inaba — formerly a designer of Sony consumer products such as the Handycam video camera. "Inaba really considers the human factors," Takahashi says.

Sony's commitment to information technology investment is impressive: The worldwide IS budget is about $245 million. IS spending is increasing at a staggering 20% per year in Japan. The firm won't disclose its actual IS budget, but Takahashi says spending will continue to increase.

Measuring the return on investment is as dicey for Sony as it is for IS managers in the U.S. "We do [return on investment] for all projects, but the quality of that ROI measurement is a problem," Yoshino says. "After the installation, we try to judge whether we attained the benefits or not." □

Mirror, mirror

Though Sony Corp. of America has autonomy in its IS endeavors, it follows the lead of Ken Iwaki, Sony's CIO in Japan, who seeks to make Sony a truly global entity

Sony Corporation
Tokyo, Japan

- Top IS executive: Susumu Takahashi, senior general manager
- 1,000 IS employees
- 2 data centers
- Faces shortage of software engineers and applications development backlog
- Exploring CASE tools with guidance from U.S. operation
- Annual IS budget: $245 million worldwide*

Sony Corporation of America
Park Ridge, N.J.

- Top IS executive: Bob Trenchard, senior vice-president, MIS
- 400 IS employees
- 5 data centers being consolidated to 1
- Enjoys surplus of software development talent
- Three years into major CASE project
- Annual IS budget: $40 million

*Figure for Japan alone was not available

CW Chart: Doreen Dahle

SONY: U.S. VIEW

Continued from previous page

tory systems — projects requiring 100 to 120 man-years for each segment. Changes in the U.S., Trenchard says, will have ramifications for all of Sony's international IS operations. Sony is committed to the Computer Integrated Enterprise, a concept similar to computer-integrated manufacturing. To achieve this, IS must work closely with its global counterparts.

Trenchard's mission — getting the 400 IS employees to work closely with Sony's end users — is paying off. Turnover in IS is down from 45% four years ago to close to zero, and the IS budget is increasing, he says. This year, the budget rose 59% to more than $40 million. "The most satisfying part of this is that the budget increase for MIS was fought for by the business units, not by us," Trenchard says.

The bulk of IS spending at Sony is being invested in systems development for the 68 business units scattered around the U.S. In addition, a chunk of capital is going toward a new IBM 3090 200S for the San Diego facility. Currently, San Diego has a 3081, while Park Ridge houses a 3090 50J. The mainframes process much of the financial, manufacturing and sales data. Sony has a few midrange IBM Application System/400s and System/36s with Digital Equipment Corp. VAXs in engineering.

IS supports more than 3,000 desktop systems around the country and has standardized on four offerings: IBM Personal System/2s, Apple Computer, Inc. Macintoshes, DEC Vaxstations and a Japanese workstation made by Sony.

Trenchard points out that he has an advantage over his Sony counterparts in Japan because critical software development — CASE and AI — is happening here at a more rapid pace than in Japan. A joint committee to spearhead CASE development in Japan recently got under way. In fact, a lack of software engineers in Japan is at the root of Sony's decision to move some of its key functions, such as research and development, to the U.S. and Europe. With chip technology increasingly playing a key role in Sony's vast electronics product line of camcorders, televisions, VCRs and stereos, speed to market has become the No. 1 priority for IS.

"We used to bring out a product from start to finish in two years," Trenchard says. "Now it is six months and sometimes faster. It's an absolute necessity that we have the most flexible, most responsive systems operation in our industry."

In that regard, the U.S. operations share goals and certain projects with Sony IS in Japan. An example is an EIS designed to allow Sony executives to do decision support, play "what-if" games and stay one step ahead of critical industry trends. The Corporate Business Information Project, as it is known, is a joint project being done with Sony Japan. Several key IS people from both countries will rotate between Japan and the U.S. to work on the system, which is based on technology from Comshare, Inc. in Japan and Pilot Executive Software in the U.S.

In turning around the U.S. operation, Trenchard wants "the most cost-effective IS operation in the industry." His enthusiasm for Sony and working with the Japanese comes through in every aspect of his conversation. "I'm a better person for working here," Trenchard says. □

RIFKIN IS A COMPUTERWORLD FEATURES EDITOR.

Old Ways, NEW INFLUENCE

R. M. Kato

CIOs fulfill a unique role in Japanese firms' corporate structure

BY CLINTON WILDER

One of the most popular American songs in the *karaoke* bars, where Tokyo salarymen go to pass around a microphone and sing into the wee hours, is Frank Sinatra's "My Way." Without question, there is A Japanese Way to conduct business, and the information systems organizations of Japanese corporations are no exception.

Within IS, one finds the same Japanese management concepts that have become legendary: emphasis on consensus, group decision-making and lifetime employment, with rotation through several different functional areas.

Although IS is raising its profile as a strategic component of the Japanese corporation, it is evolving within the existing structure rather than challenging it.

The Japanese concept of a chief information officer exemplifies this. An increasing number of Japanese corporations use the term CIO, says Motokazu Orihata, president of Peat Marwick Consulting Co. Ltd. in Japan. However, Japanese firms have molded the CIO concept to fit their indigenous corporate culture.

To an American, a CIO is a company's highest ranking IS executive. A loose definition of the Japanese CIO would be a senior non-IS executive who acts as the high-level sponsor and supporter of information technology within the company.

Where a CIO is present, he usually exists in practice but not in title. IS staffers can point you to the person who functions in that capacity within their organization, but the title after that person's name is most likely to be something similar to "director."

One reason that the title is seldom actually conferred is the sense that it might imply ownership or control over information, which is viewed as a shared business resource. "If information is grasped by just one person, others may get nervous," says Masayasu Masuda, general manager of the office automation planning & coordination department at Mitsubishi Corp.

For the most part, the person called CIO is not the chairman or chief executive officer of the company but rather an executive several levels below the top job who is perceived as a rising power. A recent survey by *Nikkei Computer,* a Japanese IS publication, found that in 43% of the companies that say they have an executive functioning as a CIO, that official is an executive

managing director, three levels down from the president. One-quarter said a director — roughly equivalent to a U.S. division head — functions as CIO. Only 3% — four companies out of 126 — accorded that duty to their president.

In a business culture where relationship-building is the foundation for every action, the CIO is viewed as the executive who can bring together various functions to promote the IS cause.

The idea of a nontechnical sponsor for IS is actually just an extension of normal practice within IS departments, because the Japanese way of organizing and managing IS is also built on the fundamental principle of employee rotation.

Although career IS managers do exist, they are in the minority. An IS manager is much more likely to have served terms in materials controls, accounting, finance, purchasing, engineering or even the legal department — all within the same company.

Mitsubishi Corp.'s Masuda, for example, is a chemical engineer by training and spent 30 years in engineering and sales before moving to IS in 1988 (see story below).

Bank of Tokyo analyst Keita Abe, who studied law in college, says that having a non-IS background actually makes it more likely that he will do a stint there than someone who studied computer science. "The fact that [a colleague] has a computer background may not mean he will be transferred to the computer department, yet I, with my law background, may be transferred there," Abe says. "Everyone is treated equally regardless of their background."

The way to go

In many ways, this organizational approach is ideal for promoting the effective use of IS. Barriers to business understanding are small, because employees are likely to have worked in several different areas. That creates a critical mass of collective thinking that is greater than the sum of the parts, says Peat Marwick's Orihata. "Different functions can communicate, which not only links the functions but generates new ideas," he says.

The rotation system is, however, heavily dependent on the fact that a lot of technical expertise and programming talent has traditionally been supplied by vendors. There is some question about whether extensive rotation will continue to be feasible now that vendors are cutting back on that kind of customer service and users are demanding more sophisticated systems (see story page 23).

Another development that may create more of a need for IS specialization is the increased trend toward setting up the IS function as a separate business, which often sells processing services to other firms within its *keiretsu*, or family of companies.

Tokyo-based Dentsu, Inc., which has revenue of about $9 billion and is the world's largest advertising agency, was an early adopter of this strategy. It spun off IS back in the 1970s in a joint venture with General Electric Co. The two firms formed Information Services International-Dentsu Ltd. (ISID), of which Dentsu owns 66.6% and GE 33.3%. Recently, labor shortages, combined with vendor cutbacks and the hunger for more and better applications, have prompted many more companies to start thinking about IS as a profit-making activity.

Typically, the spin-off operations handle the more routine aspects of IS, such as processing and programming. More critical functions, such as applications design, end-user support and technology research and development, remain in-house. □

BUILDING A TEAM SPIRIT

MASAYASU MASUDA, the amiable general manager of Mitsubishi Corp.'s office automation planning and coordination department, enjoys pointing out two pieces of Americana in his office to U.S. visitors. On one wall is a poster from the Kentucky Derby, which he has attended, and above his desk is a photo of New York Yankee great Mickey Mantle.

Despite these souvenirs and his nearly flawless English, Masuda runs a typical Japanese IS organization. It is one that relies on the frequent rotation of managers, seeks to improve its relationship with users, faces the need to make computing a less threatening prospect for senior executives and grapples with the challenge of using IS strategically in a highly varied business.

Mitsubishi Corp. is separate from the giant electronics, auto, chemical and banking firms that share its name. Its business is joint ventures and partnerships in dozens of different industries such as import/export, natural gas, retailing, metals and food. Relationship-building is the foundation of all Japanese business, but it's the very lifeblood of Mitsubishi.

Kaku Kurita/Gamma Liaison

Mitsubishi's Masuda *brings a user perspective to IS*

"Eighty-five percent of the know-how we have cannot be put into a computer right away," Masuda says. That doesn't mean that Mitsubishi backs off from IS — quite the contrary. Its IS budget is growing at 12% per year, and 40% of those yen go to departmental systems and applications. The firm plans to have a total of 3,800 workstations (terminals and personal computers) by 1991, more than triple the 1,200 it had in 1987.

"In the past two years, we have pressed the company to think more about IS, and the IS mind-set is prevailing pretty quickly," Masuda says.

A chemical engineer by training and a 30-year Mitsubishi veteran, Masuda took over his current job — his first ever in IS — in 1988. He tries to bring a user perspective to Mitsubishi's IS organization, but it sometimes can be frustrating.

"IS wants everything to be 100% complete technically," he says. "Users don't care about all the minor things. We just want [the applications] faster. IS people all say they understand, but I have to continue to talk. And then if I don't see them for a couple of days, I have to start all over again."

— Clinton Wilder

CASE STUDY

Cashing In On CREDIT

Japanese shoppers don't leave home without Marui's little red card

BY AMIEL KORNEL

Judging by the overflowing crowds in the Tokyo retail districts of Shinjuku and Ikebukuro, the once-frugal Japanese have embraced spending with a passion. And computers are helping them disburse their yen with greater ease.

At Marui Co., Japan's tenth-largest and most profitable department store chain, information systems have played a key role in capturing customer loyalty and disposable income.

More than 10 million Japanese, almost exclusively young people, carry Marui's red credit card. That number represents 30% of all the department store credit cards issued in Japan.

Credit-card purchasing is still the exception rather than the rule among the savings-minded, cash-and-carry Japanese public, but Marui clearly knows how to stimulate demand and handle the processing of credit transactions.

Sixty percent of purchases at Marui stores are made using its credit card. At other Japanese department stores, the percentage of credit sales is closer to 20%.

Kaku Kurita/Gamma Liaison

M&C's Furubayashi *says Japan's new cost-consciousness is helping to boost the firm's sales*

The basis for the company's success with credit business, Marui claims, is the early lead it established in information systems.

In 1977, the company installed an on-line system that linked all of its stores and coordinated customer services, merchandising, sales and administration.

That system allowed Marui to collect a huge amount of data on customer demographics, purchase patterns and payment histories, which served as the basis for a number of applications, such as credit evaluation.

Then, in 1984, the company decided that its applications and processing management infrastructure could also be marketed, so it spun off its IS operation as a separate money-making affiliate, M&C Systems Co.

In 1989, M&C produced revenue of $65 million through the development and licensing of applications as well as by operating a service bureau for other Japanese retail organizations.

Right now, 38% of M&C's revenue is derived from licensing fees for the company's L-Pack system, which handles credit-card issuance, sales transactions, billing, collection and sales promotion. The rest comes from in-house services provided to Marui.

The system permits issuance of a credit card within five minutes of the time a customer files an application. It also re-evaluates customers' credit worthiness and spending limits, which are based on payment history, each time a sale is made.

Thirty-six retailers currently use the software, paying $26,000 per month for the license in addition to a one-time fee for installation and training that can range from $323,000 to $646,000.

Despite the traditional Japanese preference for customization, M&C has insisted on marketing its software as a package.

While this approach initially made sales difficult, a new willingness in Japan to use packaged software in order to keep costs down is helping to boost sales, says Hiroshi Furubayashi, general manager of marketing at M&C.

In fact, 15 of the current users of L-pack signed up during the past two years. □

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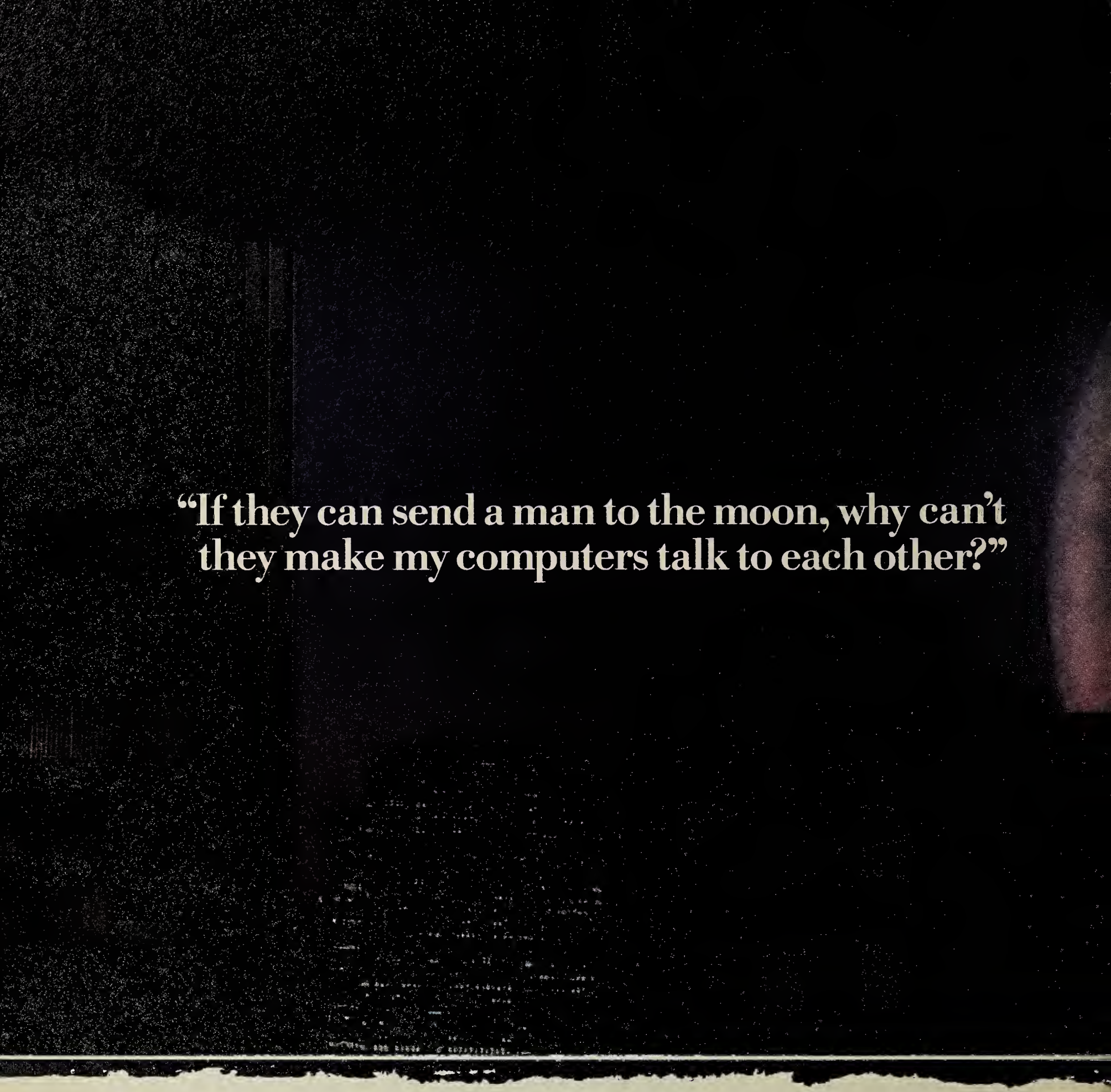

IBM Has Developed An Answer To The Looming Question Of Multivendor Networking.

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Masaaki Ogai

Desktop DEPRIVATION

Cost, culture and language barriers stymie Japanese PC use

BY PAUL GILLIN

Americans often complain about how hard it is to select a personal computer, but our purchasing dilemmas are nothing compared with what a Japanese buyer faces.

Imagine this: You want to buy a PC. You look at the options: IBM, Compaq, AST Research, Tandy, Dell Computer.

Careful. Each one is somewhat incompatible with the others, and chances are they won't run the same software.

You also want to choose a word processing package, but the only options available require you to type the words phonetically in French and then choose from a menu of English equivalents. They're slow and cost about $700.

Oh, yes — price. That Intel Corp. 80386-based PC you buy with the IBM Video Graphics Array (VGA) monitor and a couple of software packages is going to run you about $10,000. And you'd better budget for an end table because there is no way a PC will fit on your cramped desk.

Sound terrible? Well, that's a watered-down translation of the difficulties the average Japanese office worker faces when buying a PC. The PC market is studded with multiple incompatible standards, at least 10 of which carry some clout. The Japanese language is about as unsuitable to a keyboard as a language can be, and cramped office space leaves little room for a bulky computer footprint.

As a result, PC growth has been far slower than in the U.S. Only 2% of Japan's population uses PCs, compared with 10% of the U.S. population, according to Japan Entry, a Boxford, Mass.-based consulting firm.

"We're at the stage the U.S. was five to seven years ago," says Roger Boisvert, president of the Tokyo PC Club.

Things are slowly turning around as better software from both sides of the Pacific hits the market. Sales of packaged PC software jumped 44% in 1989, according to the Japan Personal Computer Software Association.

But why has such a technologically advanced country lagged so far behind in desktop computer use? There are several reasons:

• **Language.** Only in the last three years or so has software

that can produce the complex Japanese Kanji characters come into widespread use. Even the best Japanese language word processors are ponderously slow compared with those in the U.S. For example, Just Systems' Ichitaro, the leading Japanese word processing software, requires users to enter words phonetically in English or in Katakana, a 56-character Japanese phonetic alphabet. A front-end processor interprets the phonetic input and translates it into displayed text.

The process takes about twice as long as English language word processing, and the front-end processor's phonetic dictionary adds about 150K bytes of memory overhead. It also requires the user to be fluent in at least two written languages.

• **Office space.** Sky-high rents in Tokyo and Osaka force office workers into close quarters and make computer space all the more precious. With desks about a third smaller than their American equivalents, it's no accident that laptop PCs dominate the market.

At Nissan Motor Co. Ltd., for example, desks are packed together in a partitionless room with Toshiba Ltd. J3100 laptops on swivel platforms, allowing two workers to share one laptop machine. The same scene is repeated in offices all over Tokyo.

• **Culture.** Some users say the data orientation so common to American businesses just does not exist in Japan. "Rather than emphasizing the use of data, Japanese managers tend to emphasize intuition and experiences as a decision-making method," said Hajime Morita, general manager of the Japan Personal Computer Software Association.

"There's a fundamental difference in working style," says Jim Adams, a PC manager at a major Tokyo financial institution. "Each year, we get a crew of freshmen out of school, and few have touched a computer. That's only beginning to change now."

• **Incompatible standards.** NEC Technologies, Inc. has the largest PC installed base in Japan with 51% of the market, according to Japan Entry. However, IBM, Toshiba, Fujitsu Ltd., Hitachi Ltd. and Mitsubishi also have significant influence. All support MS-DOS, but each vendor's implementation is somewhat different. As a result, software developers have to invest significant time and money to customize packages to different architectures.

"This creates a vicious circle in which development doesn't happen because the hardware standards aren't there, and hardware [standards] don't settle because development doesn't happen," Boisvert says.

It's like the U.S. PC market of the early

Revving Up Business With PCs

THEY SAY No. 2 tries harder. For Nissan Motor Co. Ltd., Japan's second largest auto maker, that means an unusually heavy investment in desktop systems.

In a country where business PC use is a fraction of that found in the U.S., Nissan is in the final stages of a five-year plan to link nearly everyone in the corporate headquarters office on PCs connected to Novell, Inc. Netware local-area networks. "Our theme is that more active information flow creates a more active business," says Fumiaki Yamada of the Office Automation Promotion Section of Nissan's information systems department.

For Nissan, an active information flow means reducing the employee-to-PC ratio from 9:1 to 4:1 by 1992. The number of PCs in Nissan's Tokyo headquarters has climbed from 138 in 1986 to 1,700 last year and is expected to reach 2,210 in 1990. More importantly, nearly one-third of those systems are networked, and Nissan aims to have 86% of the systems linked on LANs by 1992. In contrast, researchers estimate that only 5% to 10% of the PCs in Japanese businesses are networked today.

Office workers can use a variety of standard business software from the network servers. LAN users have access to Japanese and English word processors, 1-2-3 or Microsoft Corp. Excel spreadsheets, Ashton-Tate Corp.'s Dbase and Digital Equipment Corp.'s All-In-1 electronic mail. Nissan's OA Promotion Section is also developing some ambitious custom applications. One is a text database for the international department that stores all documents created in that department. Another is a decision support system for Nissan managers that now encompasses nearly 6,000 pre-prepared screens of analytical information. Nissan's architecture envisions Netware LANs for departmental PCs with a Fiber Distributed Data Interface backbone that will be installed during the summer in the headquarters building. Support tools like these are not cheap in a country where a laptop PC costs more than $5,000 and a copy of Lotus Development Corp.'s 1-2-3 fetches $650.

However, Nissan does not apply standard cost-benefit criteria to a strategy it believes is essential for changing the corporate structure. "Through massive interaction with PCs, we believe employees are going to change the nature of their jobs," says Hiroshi Kitaguchi at the OA Promotion Section. — Paul Gillin

Kuku Kurita/Gamma Liaison

Nissan's Kitaguchi *promotes active employee interaction with PCs*

'80s, when vendors vied with one another to create MS-DOS-based standards. Unlike the U.S., though, the Japanese market is unlikely to rally around a leader anytime soon. Many retailers are loyal to certain vendors and will not, for example, let desktop systems from NEC and IBM share shelf space.

In fact, hardware vendors offer incentives to software makers to limit themselves to certain platforms.

"Every year, I get offered more *not* to port [my software] to new hardware," Ito says.

• **Limited software.** The combination of a small market and multiple standards has meant slow going for the domestic software industry. Top-selling Ichitaro, for example, has only 300,000 installations, according to *Nikkei PC*, an industry magazine.

In contrast, Lotus Development Corp.'s 1-2-3 has sold more than 10 times that many copies in the U.S. "It is very costly to develop for [the Japanese] market, and the potential sales are small," Morita says.

• **Costs.** Computers, as with most other things, are expensive in Japan. An Apple Computer, Inc. Macintosh IICI sells for roughly $9,200 in a Tokyo Computerland, while an identically configured machine at a Boston Computerland retails for $5,700. Wordperfect Corp.'s Wordperfect, which costs $270 at the local Egghead Discount Software in the U.S., sports a $650 price tag at a Tokyo computer retailer. These factors have added up to make the PC a slow bloomer, but the future looks brighter. With the language barrier largely overcome and more powerful machines reaching the market, some firms are making large-scale commitments to PCs.

Companies such as the Bank of Tokyo and Japan Air Lines have harnessed desktop technology for strategic advantage. Nissan has targeted a ratio of three users for every two PCs by 1992, and The Sumitomo Bank Ltd. has already outfitted half of its workers with desktop systems.

As the value of personal computing becomes more apparent, a different characteristic of Japanese business may take hold. "People buy whatever they need here," Boisvert says. "Short-term costs are not much of an issue." □

Slow bloom

PCs are starting to move into Japanese offices, but dedicated word processors are still in vogue

	U.S.	Japan
Population	250M	120M
PCs	25M	2.7M
Word processors	12M	9M
Engineering workstations	179K	69K

Source: Japan Entry — CW Chart: Doreen Dahle

Customized Template Maps Out Investment Decisions

WHO SAYS JAPAN'S corporate culture suppresses individual initiative?

Not Mario Tachibana. By combining his knowledge of finance with spreadsheet virtuosity, Tachibana has created a new source of revenue for the Bank of Tokyo.

In Japan, where PCs are still fighting for space on the desktop, a single application of the technology can still make a difference. Tachibana, who is assistant manager in the bank's corporate advisory division, came up with an idea to automate a big part of his department's work, which involves playing out investment scenarios for commercial clients. The advisory division analyzes the financial structure of client companies and helps them decide where to put their money.

Until recently, most modeling was done with paper spreadsheets, desktop calculators and intuition. With the automated Management Planning System (MAPS) developed by Tachibana, the medium has become a Lotus Development Corp. 1-2-3 Release 2J worksheet.

A MAPS team now develops customized 1-2-3 templates for customers showing the impact of various investment decisions on areas such as profitability, cash flow, tax liability and depreciation. "MAPS is tailor-made to each customer," Tachibana says. "As the project progresses, we can modify the model to meet their changing needs."

The models are massive, requiring an Intel Corp. 80386-based desktop computer, 8M bytes of memory and a 100M-byte hard disk — about a $20,000 investment in Japan.

The payback is considerable, however. MAPS has added about 200 customers to the corporate advisory service in less than four years. The project that started as an individual's brainstorm now employs eight people within the corporate advisory division, and the MAPS spreadsheets and graphics have become a staple of corporate advisory division presentations to prospective clients.

Bank of Tokyo's *Tachibana automates investment scenarios for clients*

Bank of Tokyo's IS department has played a minimal role in the MAPS project, but that's not unusual, Tachibana says. User departments often work informally on technology applications, sometimes in collaboration. For example, the corporate advisory division is now working with the corporate finance department to develop a program that lets bank officers analyze customers for creditworthiness.

Despite the success of MAPS and his computer science background, Tachibana says he doesn't see his future in computing. "As a banker, I must be good at banking," he says. "I would like to work in specific fields using computers. But I am a banker first."

However, PC fever is apparently catching. Last year, the bank distributed PCs to all 154 "freshmen" — first-year employees — in hopes that they will bring the technology to bear throughout their careers. — Paul Gillin

Customers Force A Market *Free-for-all*

BY AMIEL KORNEL

Traditional loyalties are challenged by economic realities

Single computer suppliers have been the rule in Japan ever since IBM painted the country blue with its mainframe computers in the late 1950s. At that time, and for the next 10 years, IBM systems so dominated the market that data processing managers were known as *IBM gakari*, or "the person in charge of IBM."

"Thirty years ago, even Hitachi was a big IBM user," says Yasuhiko Tani, executive managing director of Hitachi Ltd.'s computer, telecommunications and office systems group.

Although IBM's dominance began to fade in the mid-1960s with the rise of Japanese mainframe vendors such as Hitachi, Fujitsu Ltd. and NEC Corp., the tradition of corporate commitment to a single vendor persisted. There are clear signs, however, that this chapter is coming to an end.

The harsh economic realities of global competition are pushing the Japanese into new and more adversarial relationships with their computer suppliers. The need to keep costs down while improving the quality of products and services is forcing companies to re-evaluate their procurement strategies and spread buying among several vendors.

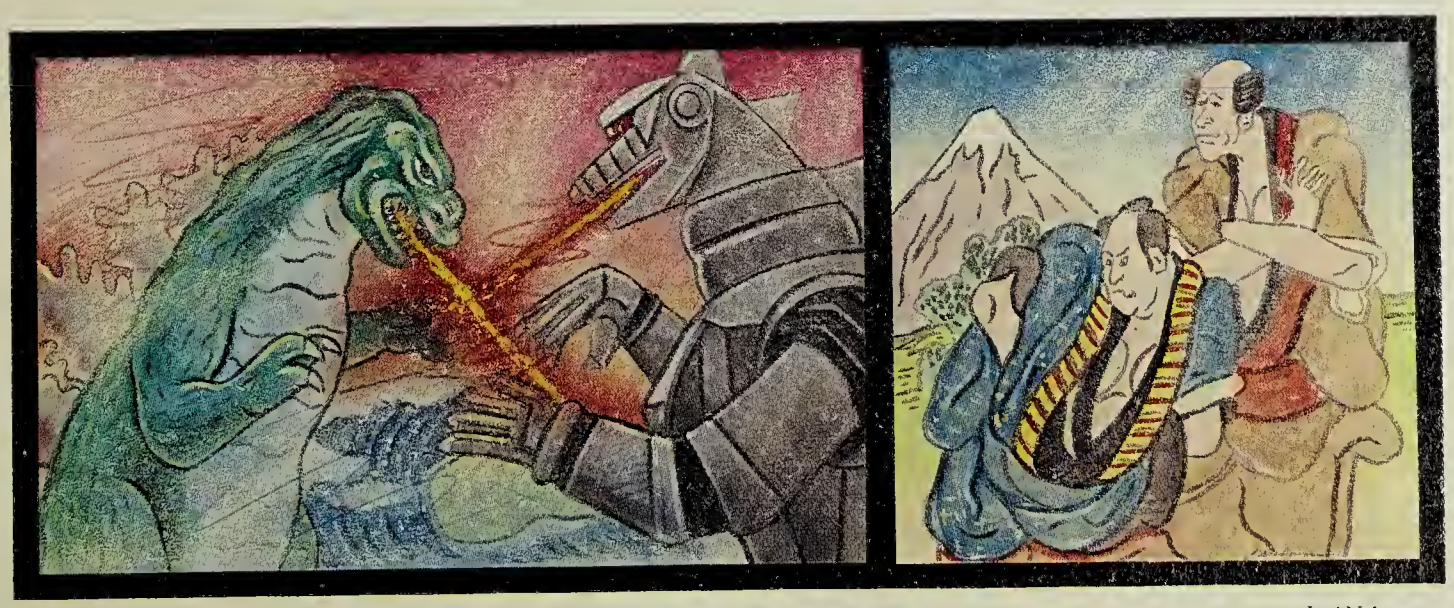
"The traditional customer loyalty to one vendor is changing," says Takuo Kikukawa, deputy general manager in charge of domestic marketing at Fujitsu. "We think a multivendor era is dawning in Japan."

Loyalty, exclusivity prized

Why did single-vendor relationships remain entrenched for so long? Much of the answer can be found in centuries-old Japanese attitudes about dealing with suppliers. Historically, the Japanese have preferred commercial relationships based on loyalty and exclusivity.

For buyers, this has often meant forgoing the price advantages and, sometimes, the improved product quality that competitive markets create. "Unless products are far superior or much cheaper, they wouldn't switch vendors," says Keiichi Maesato, a consultant in the Tokyo office of market research firm International Data Corp.

In return for their unswerving loyalty, customers



Joel Nakamura

asked for and received exceptional levels of support, including custom-made products and extensive low-cost service and support.

"Japanese people really appreciate a long-lasting relationship and demand a lot more hand-holding," Maesato says.

Joichi Ito, president of software distributor MDG Japan, Inc. complains that the level of demand for support can sometimes be exasperating. "When my beeper goes off," he says, "I have to run to a phone and call the customer right then."

The pricing structure employed by Japanese vendors reflects the premium users place on inexpensive but wide-ranging services. "Vendors keep a close relationship with companies by keeping hardware prices high and software and services costs low," says Mochio Umeda, a consultant at Arthur D. Little (Japan), Inc.

For many Japanese information systems buyers, intense loyalty has been a pragmatic necessity as well as a cultural preference. The influence of powerful industrial groups that pressure companies to buy from favored vendors and the hammerlock of proprietary standards have kept IS users firmly in the grip of suppliers.

Large Japanese companies belong to loosely tied industrial groups centered around a major bank. Called *keiretsu*, these groups have traditionally wielded much economic clout. For example, NEC, formerly called Sumitomo Electric Co., is part of the Sumitomo *keiretsu*.

In the past, members of the group — The Sumitomo Bank, Sumitomo Life Insurance Co. and others — favored *keiretsu* partners in their business dealings. Although prices are sometimes higher than those demanded for similar goods and services that are provided by alternative suppliers, pressure that is exerted by other members generally keeps potential renegades in line.

A plethora of proprietary protocols and architectures has also reinforced the bond between IS users and their suppliers. "If standards became more available, I would have more courage to change vendors," confides Hideo Watanabe, IS director at chemical manufacturer Mitsubishi Kasei.

While Japanese vendors such as Hitachi and Fujitsu are known in the West as makers of systems compatible with IBM equipment, in their home market they have tweaked things just enough to lock users into proprietary architectures. "Open systems are not of interest to [vendors]," says Rob Morel, director of the Open Software Foundation's Tokyo office.

"It's important for a manufacturer to have its own operating system that is not completely plug compatible," Fujitsu's Kikukawa says, "and to offer features not offered by IBM."

Custom-made in Japan

What's more, standards can be hard to preserve in a country where customization is in high demand, he adds. "Sometimes we have to change or enhance our operating system to meet customer requests."

The Japanese demand for customization has also meant that hardware vendors are often called on to develop specific applications software for users. This practice further erodes users' independence.

"We often work with the vendor to develop systems," Watanabe says. "If the relationship is too adversarial, we can't do that." Mitsubishi Kasei, which began using IBM equipment in 1952, turned to Fujitsu computers 20 years ago, becoming one of the mainframe maker's first customers, Watanabe says. Until recently, he headed Japan's Fujitsu users group.

Winds of change

Some companies have already begun bucking tradition, however, spreading their purchasing across more suppliers. As a result, Japan's computer behemoths are being drawn into competitive bidding by buyers trying to drive down prices.

"Customers are becoming tougher in price negotiations," acknowledges Soji Endo, manager of overseas operations for Hitachi's computer business.

One of the new breed of tougher customers is The Sumitomo Bank, which IS chief Yoshiyuki Fujii says has turned to multivendor procurement as a way of keeping a cap on its $200 million to $300 million annual IS budget. The bank's 12 mainframes come from NCR Corp., IBM, Digital Equipment Corp., Unisys Corp. and NEC. "One of the reasons we use five vendors is to minimize our cost for investment in new machines by letting them compete," Fujii says.

The growing push for competitive bidding has already resulted in lower prices. IDC's Maesato says that IBM has been discounting heavily for the past two to three years.

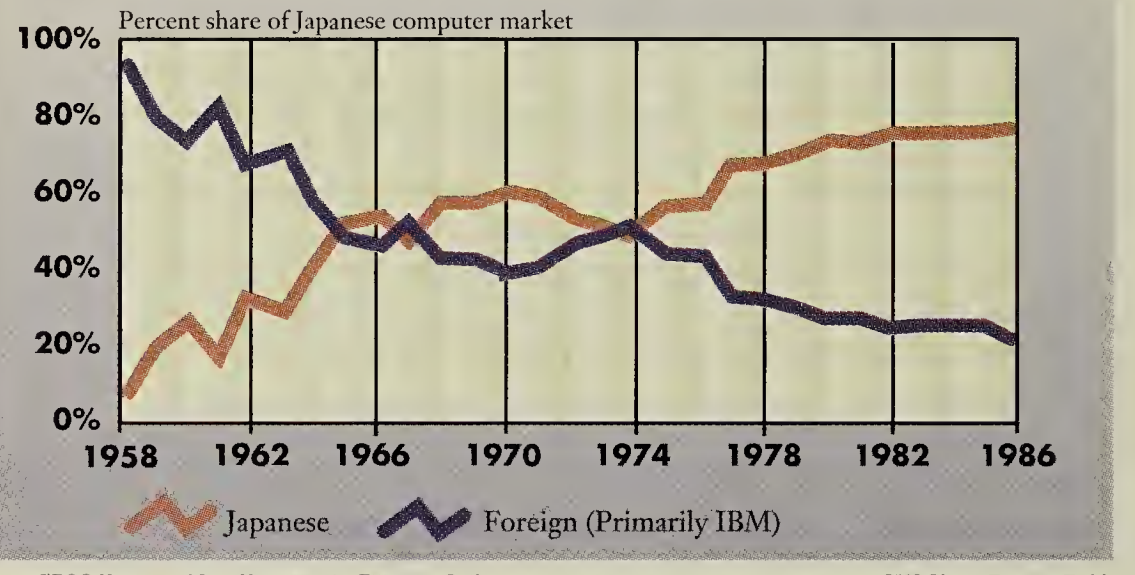
Moreover, IBM, Fujitsu and Hitachi changed software pricing policies during the past year, lowering costs for small- to medium-size users. "Manufacturers pay for customer loyalty by giving in on prices," a Fujitsu spokesman says.

The need for more cost-effective systems is also clearly weakening the influence of the *keiretsu*, says Akira Morita, consultant at Arthur D. Little. While for expensive mainframes, companies still might bow to the group's pressure, he says that for departmental and networked personal computers "they go outside."

The shackles of proprietary protocols are also loosening. The international open standards movement that is gaining momentum in Europe and the U.S. is reaching Japan's shores, according to observers. Japanese users involved in international business are starting to pressure their domestic vendors to provide Open Systems Interconnect capabilities and standard Unix operating systems. □

Bucking tradition

Japanese computer buyers are becoming pro-choice as they seek to keep prices down



Source: *JECC Kompyuta Noto, Kompyutopia, Fujitsu no Gaikyo*

CW Chart: Doreen Dahle

The Labor Crisis
BUILDS

BY JOANNE KELLEHER

Information systems managers in Japan don't need an abacus to figure out that there is something seriously wrong with the numbers they are trying to reconcile. When they add escalating user demands and top-level pressure for strategic information systems to applications backlogs that already range from one to five years, they get a sum far bigger than current systems engineering and programming staffs can handle.

Jiro Matsuki

"If I were to choose the one biggest problem we have right now, it would be lack of personnel," says Kenichi Hayashi, manager of business systems in one of Mitsubishi Corp.'s two IS departments.

That's a problem that is increasingly difficult to solve in a country already suffering from a full-fledged labor drought. Japan's Ministry of International Trade and Industry (MITI) estimates that there are currently 251,000 fewer programmers and software engineers than needed, and it is projecting the deficit will swell to 965,000 by the year 2000.

However, the numbers really only tell part of the story. What they don't disclose is worse.

To begin with, there are the wage demands that go along with scarcity. Daniel Maher, a senior managing partner at consulting firm Chuo Coopers & Lybrand in Tokyo, says new hires are expecting and getting anywhere from $8,000 to $16,000 more than existing staff, and wages are rising, on average, about 10% to 20% per year.

An additional complication is that IS departments in Japan have long been extremely dependent on software development assistance from hardware vendors, and now, at a time of maximum work load, that support is being withdrawn.

Until recently, it was common practice for computer vendors to stage-manage and underwrite major portions of the systems development efforts of large customers.

"They would send systems engineers — in some cases, hundreds of them — to work for major customers in systems development," says Yuji Ogino, managing director at International Data Corp. Japan Ltd. "Also, if they charged anything at all for this service, they usually only asked for a nominal amount."

This practice is usually referred to as "good luck business." But the good luck has now run out for the majority of customers. Vendors are also struggling with labor shortages and escalating wages. The *Nihon Keizai Shimbun (Japan Economic Journal)* recently reported, for example, that NCR Japan came up 25% short of its recruiting target for science specialists last year.

That kind of hiring problem, in combination with growing pressures on hardware pricing, is causing many vendors to conclude that they can no longer afford to subsidize the applications development efforts of their customers.

The biggest accounts are, in many cases, being

offered the option of participating in joint development partnerships with vendors, in which both sides contribute funds and personnel. Less favored customers, however, are left to fend more or less for themselves.

Get with the program

Many companies are turning to contract programming firms to execute their application specifications. For example, CSK Corp., which is Japan's leading systems software development house, has already decided that its current base of 6,200 employees will not be sufficient to keep up with rising demand.

According to *Business Tokyo* magazine, the company has spent $107 million over the past two years on the creation of a training center.

Programming in Japan is viewed "as a mechanical activity, not a creative art," says Gabriel Rozman, information technology director at Ernst & Young International.

For that reason, IS managers are generally less worried about programmer shortages than they are about scarcity of systems engineers capable of planning and developing sophisticated information and communications systems.

"It isn't so easy when it comes to systems engineers," explains Tsutomu Ohta, general manager of the IS department at Nissan Motor Co., which is currently employing six outside firms — in addition to the IBM service department — to assist with not only the design, but also the engineering of large-scale systems.

This is not an approach that the company is particularly happy with, Ohta says. "It's very expensive, and these firms lack knowledge of the industry," he adds.

However, Ohta says, he doesn't have much choice at the moment.

It isn't only the expense or the lack of specialized knowledge that makes dealing with outside contractors, such as consulting firms and systems integrators, a difficult step for Japanese companies, according to Maher.

"Systems engineering is considered a key business issue," Maher explains, "and in Asia in general, it has long been seen as a sign of failure for a company to have to hire outsiders to deal with its business issues."

Traditions of all kinds are beginning to give way, however, as Japanese companies struggle to reconcile the pressing need for ambitious information systems with the growing deficits in systems design and development personnel.

Cradle-to-grave employment, the entrenched seniority system, exclusive relationships between corporations and top universities, taboos on taking core business issues outside the corporate family, the automatic relegation of women to menial labor — all of these long-standing totems are beginning to erode in the face of intractable personnel shortages.

Mitsubishi, as an example, broke with tradition this year and started recruiting midcareer systems professionals. The company took this step only after trying a number of other tactics to cope with a rising tide of systems development and support requests, including reorganizing its IS department to facilitate the transfer of systems development to individual business areas.

For a company like Mitsubishi, the decision to hire IS personnel trained in other places represents a big step into the unknown. Hiring fresh out of colleges and universities has long been a near sacrosanct corporate policy in Japan.

This practice, along with cradle-to-grave employment, has been the cornerstone of Japan's famously cohesive corporate cultures. By plucking new employees fresh from the classroom, companies were able to inculcate them with the company's particular values and philosophies and create maximum personal identification with the company's goals.

Harmony vs. experience

Bringing older, experienced workers trained by other companies into such a carefully balanced environment means running the risk of introducing foreign ideas and disharmony.

Among other things, the hiring of outsiders upsets the seniority system, raising the specter of Western-style competition and back-biting.

Clearly, however, many companies feel that the current situation warrants taking those risks. According to the *Nihon Keizai Shimbun,* financial services companies are moving aggressively in this direction, and three of Japan's leading city banks have already hired a total of 150 midcareer workers.

Equally revolutionary is the fact that many large companies are starting to recruit outside their collegiate networks, extending offers to graduates not only of second- and third-tier private universities but even low-prestige technical schools run by the prefectures.

According to Maher, corporations are lining up to solicit these non-pedigreed students. "The technical schools are getting swamped," he says. "Each male graduate now has at least three offers to consider."

Women, so far, have not benefited greatly from the new liberalism in hiring policies. IS departments, and Japanese companies as a whole, are still largely male preserves.

Women tiptoe through the scene carrying tea for visitors or hauling briefcases and heavy equipment, but these omnipresent "office ladies" are regarded as decoration, not professionals in training.

Women already outnumber men on college campuses, however. And by the time that the estimated 90,000 of them are ready to graduate in March 1991, some employment experts say they believe that companies will be ready to break that last taboo. □

KELLEHER IS A COMPUTERWORLD FEATURES EDITOR.

Doing without

The gap between the demand for and supply of IS professionals is expected to widen rapidly throughout the decade

	1990*	1995*	2000*
Software engineers	107	240	422
Programmers	144	272	544
Total	251	512	966

Personnel gap (in thousands) *Estimated

Source: MITI CW Chart: Doreen Dahle

"Systems engineering is considered a key business issue, and in Asia in general, it has long been seen as a sign of failure for a company to have to hire outsiders to deal with its business issues."

Daniel Maher
Chuo Coopers & Lybrand

CASE STUDY

Mixing HIGH TECH and HIGH RISES

BY PAUL GILLIN

Japan's sizzling economy and the global demand for massive construction projects has transformed the country's construction industry from a bricks-and-mortar environment into a high-tech hotbed. Taisei Corp., Japan's third largest construction firm, has been at the forefront of that trend.

Success in the Japanese construction industry depends on controlling costs while navigating a maze of government restrictions. Taisei claims to be the leader in applying computer technology to design and planning.

Taisei, with $10 billion in revenue, is applying computer modeling to the staggeringly complex task of building giant structures such as power plants, bridges and the No. 1 Tokyo municipal government building, which will be Japan's tallest skyscraper when it is completed in April 1991.

The company's love affair with technology dates back to 1958, when Taisei formed a technology research subsidiary. The commitment was reinforced in 1961, when it became the first Japanese construction firm to install a mainframe computer.

Today, Taisei employs more than 12,500 people in 17 countries. That work force is armed with more than 3,200 personal computers, workstations and terminals, which translates into an employee-to-PC ratio of 4:1.

Taisei's intent, however, is to halve that ratio by the year 2000, an unusually aggressive goal in the fieldwork-intensive construction industry. More than one-third of the 125 employees in the information systems department work on civil engineering or computer-aided design (CAD) applications, most in lockstep with user departments.

Haruo Nabeshima, Taisei's affable IS director, says technology has been part and parcel of the firm's culture for the 30 years he has been there. "My personal goal is to realize construction without people

Kaku Kurita/Gamma Liaison

As director of IS at construction company Taisei, Haruo Nabeshima's personal goal is to achieve construction without people and a production environment without paper

and a completely paperless production environment," he says.

Though paper is still very much in evidence in the company's offices in the thriving Shinjuku business district, Taisei has made some major strides toward taking the labor out of project design and estimation. The company employs 17 discrete software systems in its planning and bidding process, and it has just completed a four-year effort to integrate those systems into a master design tool. Among the tools Taisei engineers have are the following:

- A laptop computer-based system for roughing out plans and proposals at the client's site. The company added graphics to Lotus Development Corp.'s 1-2-3/J Japanese language spreadsheet to allow engineers, for example, to simulate a building's exterior view from within a spreadsheet.
- A schematic design and proposal system that enables an engineer to model height and shadow restrictions, simulate a building's volume and generate cost estimates while still in the proposal stage.
- Three- and four-dimensional landscape simulations that show a proposed building and its surroundings. The images can be combined into an animated sequence to simulate, for example, a walk around the building's grounds.
- Construction analysis systems that create solid models or wire-mesh diagrams showing things such as the stress points of a design, the effects of air flow over a domed structure and a building's earthquake tolerance.
- Systems for modeling concrete structural frames and internal utility systems such as air conditioning. From the models, engineers can generate complete construction plans and parts lists.

Taisei's crowning CAD achievement is a system that connects its various design packages to create a central database for an entire construction project. Loran-T, the four-year, $8 million project, has functions for modeling the physical properties of a building, simulating the schematic design, laying in utility equipment and performing structural analysis. Loran-T is integrated with a graphical three-dimensional database that can show how designs will appear when they become a finished structure.

Taisei software *creates 3-D models of building superstructures*

The key is the central database of project specifications. Discrete modules such as cost accounting and project planning can tap into the project data to generate detailed estimates of project costs before a shovelful of earth is turned. Loran-T runs on a Digital Equipment Corp. Vaxstation 3100 with an IBM 3090 interface.

"This is a totally integrated CAD system with the building model at the nucleus," says Naonobu Fujita, general manager of the research and information department in Taisei's design and proposal division. "We are actually creating a mock-up model of the building, which becomes more accurate as we go along."

A demonstration of a building model shows Loran-T generating a 3-D solids model of a building superstructure from a set of specifications. Engineers can enter specifications for something such as an air-conditioning system and Loran-T will generate the parts requirements, create a cross-section diagram of the building showing the location of the air-conditioning ducts and then generate a full-color simulation of the building's interior showing the ducts overhead. Users can "walk through" the building for a simulated visual inspection.

Backing up Taisei's high-tech infrastructure is a backbone network that provides high-speed communications between its Tokyo headquarters and 12 branch offices throughout Japan. The in-house network features Ethernet communications on each of the 26 floors that Taisei occupies, along with dual 50M bit/sec. hyperchannels that automatically back each other up. The network supports voice, data and full-motion video.

More than 1,500 miles of leased-line communications link offices throughout Japan at speeds from 384K to 3M bit/sec. A critical tributary covers the geographic triangle formed by the firm's Tokyo and Osaka offices and its Totsuka research center. That lifeline network uses a combination of 3M and 1.5M bit/sec. lines to provide speed and redundancy. The whole network is monitored by a network management system that Taisei, like many Japanese companies, developed itself.

The next step, says Yasuhiro Takahashi, senior systems engineer in IS, is to expand its communications network to an estimated 3,000 construction sites worldwide by tying them to the corporate network via a value-added network. There is still plenty to be done. While 90% of Taisei's workstations in the head office and branch locations are networked, only about 20% of the 1,200 field devices in the field are connected. □

Go Team!

TAISEI'S DEVELOPMENT APPROACH typifies the team orientation that Japanese companies take for granted and many U.S. organizations envy.

The information systems department was only one of four players on the project to build Loran-T, a start-to-finish integrated CAD system. Employees from the architectural design, structural design and utility equipment user organizations were on the development team.

Development was then split into five task-force committees responsible for different segments of the final product: three-dimensional building model database; system environment; estimation system; drafting CAD system; and engineering document system.

Each development team included representatives from both user and IS departments. Design proceeded in parallel, with coding farmed out to a contract software house.

Involving users in system design seems natural for Haruo Nabeshima, Taisei's general manager of IS. A civil engineer by training, Nabeshima came into the IS position three years ago with no technical background or computer training.

— Paul Gillin

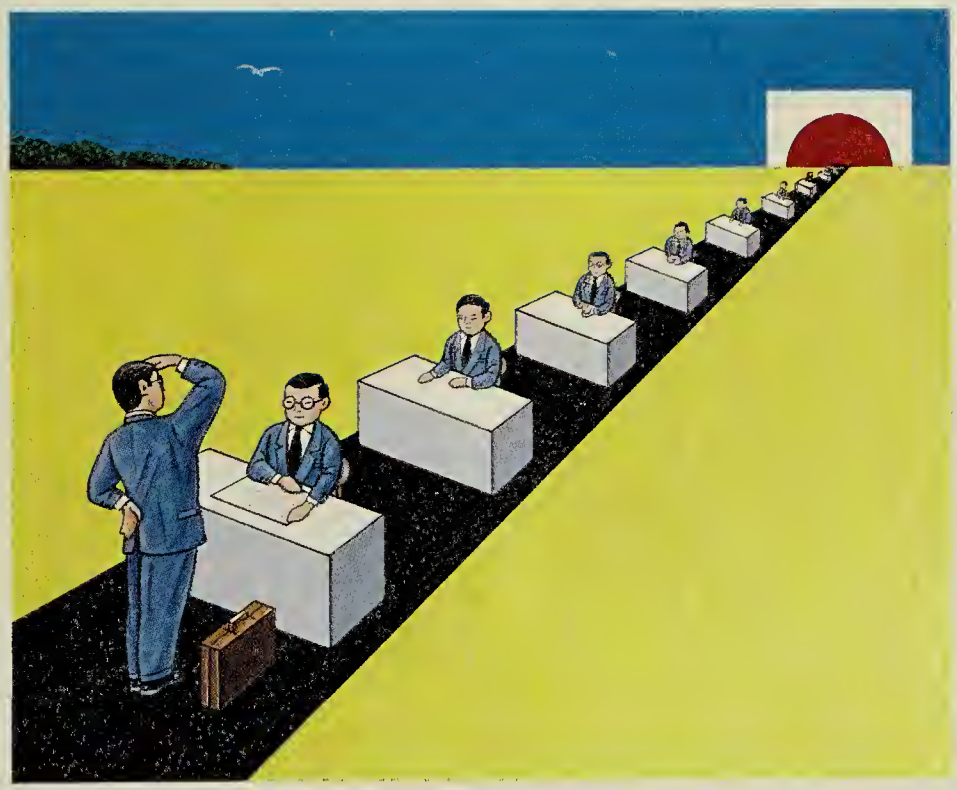
The Consensus Is: Group Process SLOWS *Decisions*

BY AMIEL KORNEL

Are the demands of fast-paced technological change on a collision course with traditional methods of decision-making in Japan? Some people think so, pointing to the fact that project planning and budget definition can be a slow and painful process in a country where risk-taking and personal initiative are largely frowned upon and consensus is all-important.

"The planning process takes so long that by the time it is done, many issues aren't relevant any more," says Gabriel Rozman, information technology director at Ernst & Young International.

What is also likely to be lost in the long process of consensus-building and compromise is focus, says Yoichiro Sakuma, a consultant at Arthur D. Little, Inc. Because achieving consensus requires reconciling contradictory views among managers and even low-level staff, objectives can become blurred.



Tomio Nitto/Reactor

Both Sakuma and Rozman blame the traditional Japanese approach to project planning for a large part of the massive systems development backlogs that most Japanese companies have accumulated. Breaking a project into manageable chunks and weighing the relative importance of project objectives is "against the Japanese culture," asserts Rozman, who has spent 5½ years doing consulting work in Japan. "Dividing an application into modules and assigning priorities," he says, "is [considered] insulting because you're telling one person his application is more valuable than another's."

But what Sakuma and others see as counterproductive, Charles Cronheim sees as "quiet and gradual" and, ultimately, more sensible. Cronheim, director of information systems at Mobil Sekiyu Kabushiki Kaisha, says that in Japan, where he has worked for the last four years, "ideas are shared with a few peers and spread laterally. By the time they get to me, they've been sold." That is in contrast to the American decision-making process, in which "99% of the ideas never go anywhere, not because they're not good, but because no one buys in," he says.

Still, for U.S. companies trying to do business in Japan, the decision-making process can seem agonizingly sluggish. "There is a long period of building trust, getting to know the company . . . It can take as long as two years to get a complete agreement," says Mark K. Shull, manager of business development at

EDS Japan Ltd. Once the agreement has been made, however, "the Japanese personal commitment is as strong as a legal document," Rozman adds.

The archetypal decision-making process — budgeting — exemplifies the Japanese method of planning. With the payback from their IS investments difficult to quantify, Japanese companies prefer to set strict limits on spending. "Most companies compute their IS budget as a percentage of the next year's expected revenue," says Yutaka Kato, a professor at Kobe University's School of Business Administration. As a result, IS managers don't know how much they'll have to spend from year to year, which makes planning difficult. Multiyear projects can suddenly lose their funding because of unexpected downswings in business.

In some companies, however, long-range planning provides IS with a buffer against year-to-year fluctuations. The Sumitomo Bank Ltd., the world's second largest bank, sets spending according to five- to 10-year plans, says Yoshiyuki Fujii, assistant general manager of operations administration.

Other companies are attempting to make planning more responsive to IS requirements by bringing the two functions together, often under a top executive. Last year, for example, Fuji Photo Film Co. established a corporate planning section dealing with corporate business, logistics and information. "That kind of arrangement is becoming more common in Japan," says Hiroaki Osuga, manager of Fuji's systems planning and data processing department.

In some organizations, traditional consensus methods are being preserved, but the decision-making group is changing to fit the times. Taisei Construction Co., for example, works on what it calls an "open team" system in which any group can create a development team with IS. As a result, a group can develop an application more quickly while keeping focus on the initial goal. Says Naonobu Fujita, general manager of research: "We create task forces to minimize the time we have to spend making decisions." □

Investing *In* *R&D* PROWESS

BY AMIEL KORNEL

Often accused of imitating U.S. technology, Japan has clearly set its sights on achieving innovative preeminence.

Signs of this resolve are everywhere. Consider the following:

- Two-thirds of Japanese managers surveyed last year by Japan's Science and Technology Agency cited strengthened research and development as their primary goal.
- Japanese capital investment in manufacturing plants, equipment and research has risen 150% during the past five years to an estimated $600 billion in 1990.
- Nearly a quarter of Japan's capital investment last year went into new products and research, up from 14% in 1980.

All of this research and monetary muscle is finding its way into many information systems-related areas.

Improving the interface between man and machine is arguably the most pressing area of Japanese research. The Kanji character set's roughly 7,000 ideographs make typing a nightmare, and although the simplified Katakana character set has at least made personal computer use a possibility, typing is still slow.

As a result, voice recognition and touch-panel technologies are high priorities. Nippon Telegraph and Telephone Corp. (NTT) is working on a voice recognition system that it reportedly hopes to have on the market in about a year's time. Sony Corp. and Canon Ltd. have

R.M. Kato

Armed with innovative new technologies, Japanese industry seeks to hone its competitive abilities

begun to offer notebook-size PCs that use touch-sensitive screens and pens that allow handwritten entry of text and data.

At the chip level, researchers are seeking new levels of component density. In an NTT project, researchers are developing X-ray lithographic techniques for making advanced, more densely packed chips. Backed by 13 of Japan's biggest electronics and semiconductor manufacturers, the project, to be completed in the year 2000, has gained financing of $100 million.

Companies are also looking at increasing the speed of circuit elements. At Hitachi Ltd., research targeting gallium arsenide, superconductors and optoelectronics is expected to lead to nonsilicon elements offering improved performance. Hitachi spent $2.8 billion — 5.8% of sales — on R&D last year, the company says.

Making components smaller does not ensure long-term technological advances, however. The next step, according to Michiyuki Uenohara, who recently retired from the post of senior vice-president in charge of R&D at NEC Corp., is to look for "completely new architectures [that], without increasing density of integration, allow an improvement in throughput."

Tip of the iceberg

This search will be one of many R&D projects on which NEC reportedly plans to spend a total of roughly $1.7 billion in 1990.

Artificial intelligence is also a major focus. Just one example is a neural network project initiated by Hitachi last year. In an early test application, researchers have been able to design a securities system that selects ideal combinations of stock investments in a fraction of the time previously required, according to the company.

Most communications-related R&D in Japan is carried out in the laboratories of NTT, which spends more money than any other company in the world on investments in new equipment and research. NTT is betting on new Integrated Services Digital Network (ISDN) capabilities to be available countrywide by the end of this year.

Kohji Ohboshi, senior vice-president in charge of corporate strategy planning, said the company projects 35,000 ISDN subscribers by the end of 1991 and 750,000 by 1995.

Although vendors are hot on the R&D trail, there is little domestic demand for breakthrough IS products. Japanese IS users seem content to remain well behind technology's leading edge.

As a result, Japanese vendors count on the readiness of foreign users to embrace new technology to drive their research efforts. In fact, new products and technologies are often tested in the U.S. before being used back home.

"We usually introduce new technology into the American market first," Uenohara says. "Japanese users . . . prefer waiting until someone else tries it."

One exception is expert systems development, which many companies are pursuing aggressively.

The Bank of Tokyo Ltd. is working with Xerox Corp. to develop an expert system application for Unix workstations that will evaluate leasing proposals, according to Mario Tachibana, assistant manager in the bank's corporate advisory division.

Chemicals maker Mitsubishi Kasei is building an application that would allow researchers to simulate stages of organic synthesis.

Also, at The Sumitomo Bank Ltd., expert systems are already performing such jobs as market forecasting and tax consulting, according to Kunihiro Ohbayashi, general manager of the systems development department. Another 10 such systems are under development for applications such as business promotion support and customer credit analysis. □

A Day in the Life

BY LORI VALIGRA

Around 7:00 a.m. each morning, as the sun rises in Tokyo, Yoshiyuki Fujii and about 10 million other Japanese "salarymen" board crammed trains for work. By the time they return home, the moon will be high in the sky.

The image of the blue-suited workaholic is alive and well in today's Japan. For Fujii, waking at 7 a.m. and returning home at 11 p.m. is a normal day's work. But it's a day that brings him enjoyment and reward.

As assistant general manager for the operations administration department (OAD) of The Sumitomo Bank Ltd. based in Tokyo, Fujii is responsible for general planning of the infrastructure for the bank's global computer system and network, computer facilities management, budget control as well as coordinating his staff of eight. His department manages hardware and software for the bank.

Kaku Kurita/Gamma Liaison

Yoshiyuki Fujii's *day, like that of many Japanese 'salarymen,' often extends late into the night*

The 38-year-old Fujii is no stranger to hard work; his bank, based in the merchant port of Osaka, is known for driving its employees hard.

"Sumitomo people are very dedicated to their work. They act as if they are bank directors or managers," says Fujii, who holds an economics degree from the prestigious Tokyo University.

As one of the most aggressive Japanese banks, renowned for its bottom-line focus, Sumitomo stands in sharp contrast to the more gentlemanly Tokyo banking circle, which generally is slower to react to new banking opportunities. So do its profits: It has the highest earnings among the 13 Japanese city banks and the third largest fund volume. Japanese banks have traditionally held lots of assets but were shy of profits compared with banks in other parts of the world.

Analysts here compare Sumitomo's corporate culture with that of Citibank NA. The bank is positioning itself to become an international player, a trait that shows in its employees: Rather than eating the traditional Japanese breakfast of fish, Fujii opts for toast, coffee and some fruit or yogurt. He spends about 30 minutes with his two young sons before boarding the crowded train in northwestern Tokyo for the 45-minute commute into the city's business hub in Marunouchi. That is shorter than the average commute of more than one hour that most Tokyoites face, but he still has enough time to scan the morning paper before arriving at the office around 8:15 a.m.

Like most Japanese offices, Sumitomo has an open floor arrangement in which each manager sits at the head of a long row of desks so that all employees can easily see each other. In his office on the ninth floor of the bank's Tokyo headquarters, Fujii starts his day by checking his schedule book to see if he must make any telephone calls.

Although he meets individually with his staff every week, the group holds a 20-minute meeting each morning to review general announcements and work schedules. Following that is another hour-long meeting at which section chiefs, including Fujii, give updates on their current activities and discuss any problems and future plans. Some days there are deputy managers or general managers (a

# of an IS Manager

level above Fujii) at the meetings to discuss general banking policy. Fujii spends about two-thirds of each day in meetings. Most of the time, the various meetings focus on the global information network that OAD administers. Recently, discussions have centered on OAD's semi-annual budget.

"Basically, we are always working on a different part of the budget. The key is to try to see what the other banks are doing through published information and opinions. We look at how they operate their systems and develop software and their philosophy of utilizing information systems or promoting business. This helps us determine our domestic and international budget," Fujii explains.

Another focus of recent meetings has been the availability of automatic teller machines (ATMs) on Sundays, which will happen next spring. Currently, ATMs are operational from Monday through Saturday, although they close by 7 p.m. on weekdays. "We must prepare for the Sunday openings and set up our facilities and maintenance teams for ATM planning. Our customers are not very tolerant [of failures], unlike their American or European counterparts." Fujii says.

Beyond the usual

While most meetings are routine, there are also problem-solving sessions, some prompted by headline-grabbing disasters at other banks. Events at Mitsubishi Bank have provoked a number of such meetings in recent years.

Following an underground fire near Mitsubishi's computer center in Tokyo in the mid-1980s, Mitsubishi's ATMs were knocked out for a day. This was the first large network disaster, starting a rush in Japan to build backup computer centers. Sumitomo decided to build a $20-30 million dollar backup computer center in Kawasaki, just outside Tokyo.

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"Salarymen are not just workaholics. They enjoy a personal life, too. They are hard-working and hard-playing."

Yoshiyuki Fujii

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Mitsubishi had another mishap this spring, when it reportedly shut off voltage to its ATMs while conducting routine maintenance on the power facility one Saturday, which caused the system to crash. "That caused a series of meetings at Sumitomo to look at our operations," Fujii says.

Following the morning meetings and an hour's lunch break in the company cafeteria, Fujii may attend another meeting, sift through a foot-high stack of IS documentation and banking and IS magazines that arrive daily at his desk, or make overseas telephone calls to technical people in OAD departments in London and New York. The purpose of these calls is to coordinate the worldwide network and to make sure there are no problems.

In addition to his work, Fujii periodically gives lectures to engineering students at local universities. Several times a week, after finally wrapping up his office work at 8 p.m. or 9 p.m., he and his staff, colleagues from other companies, bosses or college friends go to the nearby Palace Hotel or a beer hall to unwind over drinks for about an hour. Though Fujii stresses that these famous salaryman drinking bouts are not necessary once employees enter the management ranks, they are critical for younger employees establishing contacts and building group morale.

Because Fujii usually gets home around 11 p.m. or midnight five days a week and sometimes takes work home, he only sees his two boys briefly in the morning, when he checks on them in bed each night, and on the weekends, when he plays catch or goes on bicycle rides with them.

Even Sumitomo's president is stressing the importance of leisure activities and the company intercom blurts out exercise routines for five minutes every afternoon. Still, Fujii and other Japanese salarymen regularly put in long hours and enjoy them.

"But salarymen are not just workaholics," Fujii says, who plays "go" (a Japanese board game), "shogi" (Japanese chess), golf or reads when he has spare time. "They enjoy a personal life, too. They are hard-working and hard-playing." □

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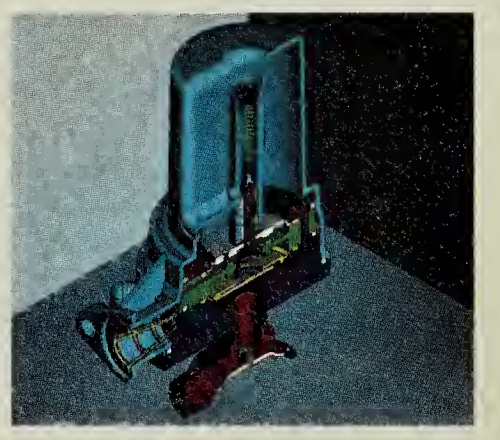

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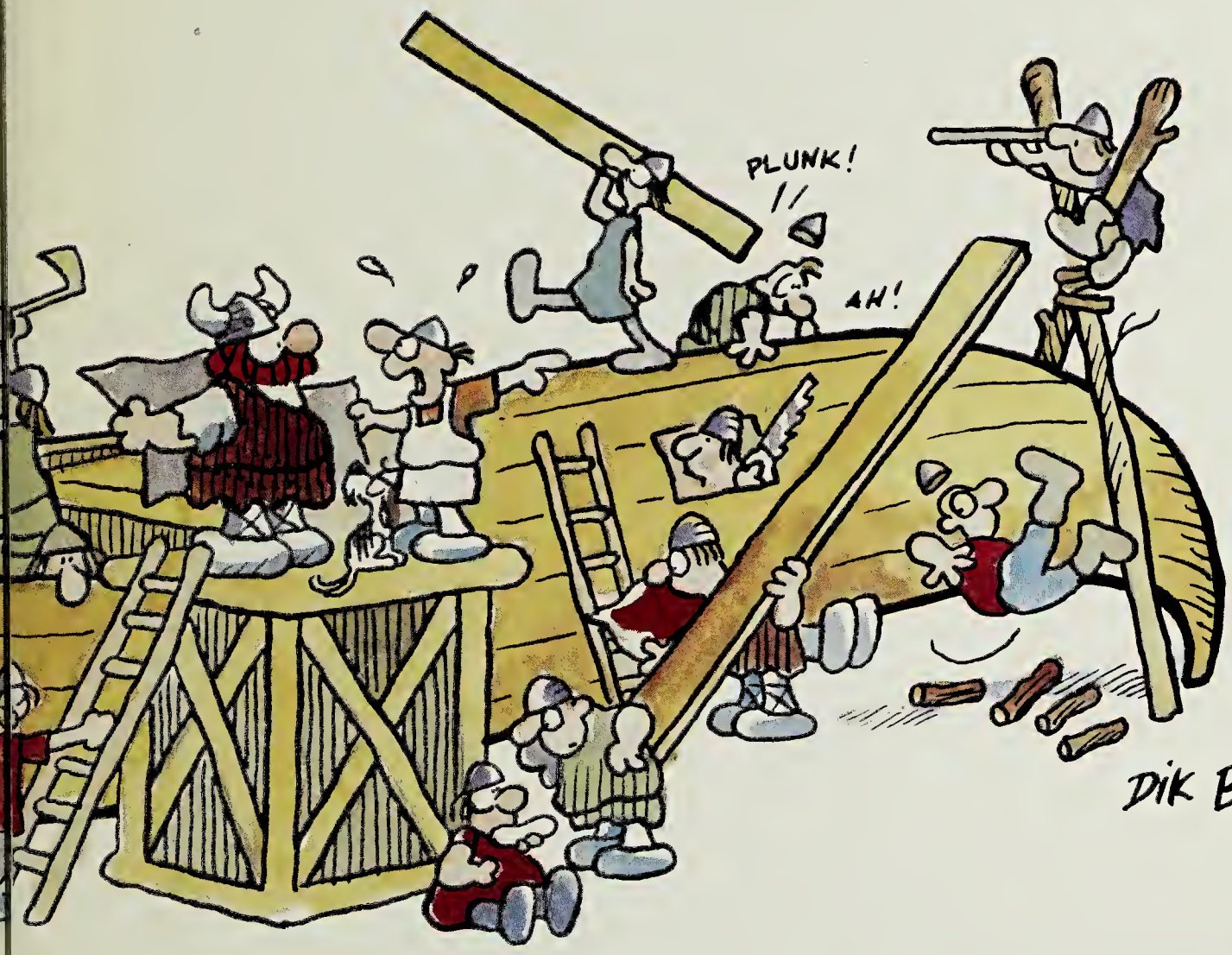

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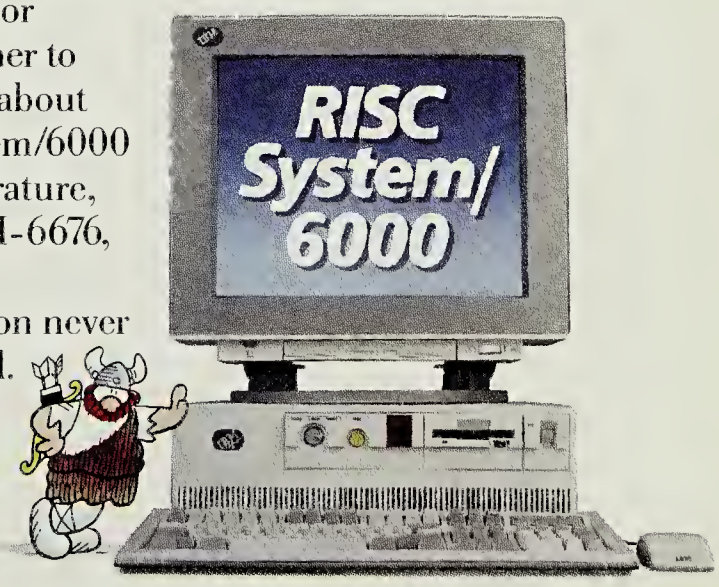

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